PHONE (219) 267-5284

DONALD D. DEATON, PRES.

MICON LABORATORIES, INC. P.O. BOX 713

Municipal and Industrial Waste Water Treatment

320 NORTH McKINLEY, WARSAW, INDIANA 46580

JAMES E. ETZEL, Ph. D.
Special Consultant

Registered Engineers
Class D Industrial Waste
Class 3 Municipal Waste

April 30, 1980

Dalton Foundries, Inc.
P.O. Box 1388
Warsaw, Indiana 46580

ATTENTION: Mr. John Canan

Gentlemen:

Following are the results of the leach test analyses which you requested:

	AFS	AFS	EPA	AFS
Sample No.	12788	12789	12790	12791
Type	Slag	Site Fill	Site Fill	~~Concrete~~ Cores
COD	7	54	36	87
Cyanide	*1	*1	1.8	*1
Lead 5.0	*0.5	*0.5	*0.5	*0.5
Cadmium 1.0	*0.1	*0.1	*0.1	*0.1
Iron	*10	*10	*10	*10
Chromium 5.0	*1	*1	*1	*1
Copper	*0.5	*0.5	*0.5	*0.5
Zinc	*0.1	*0.1	4	*0.1
Nickel	*0.5	*0.5	*1	*0.5
Phenol	*0.01	*0.01	*0.09	*0.1
Oil & Grease			0.6	
Second Extraction				
COD		*1	4	
Zinc			1.1	

* Indicates less than.
Values are given as mg/l.
Sample No. 12790 was tested according to the E.P.A. approved test procedure.
The other samples were leached according to the A.F.S. procedure.

(cont.)

excerpt from IDEMVFC.doc H
9927126
(pg 28 of 34)
accessed 11/23/10
(see also pg 29-34, for pH, ign, flability)

SAMPLE RESULTS

CLIENT SAMPLE ID: #20
CLIENT PROJECT: Waste Rust Preventative
Date Collected: 11/7/97
Date Received: 11/7/97

Report Date: 12/10/97
EIS Sample No: 047042
EIS Order No: 971100073

Parameter	Results	Units	SDL	MDL	Analyst	Test Date	Method
METALS							
Antimony,Total	0.90	mg/L	0.1	0.05	ClearN	11/13/97	200.7
Arsenic,Total	0.36	mg/L	0.1	0.05	ClearN	11/13/97	200.7
Beryllium,Total	<0.02	mg/L	0.02	0.01	ClearN	11/13/97	200.7
Cadmium,Total	<0.02	mg/L	0.02	0.01	ClearN	11/13/97	200.7
Chromium,Total	0.32	mg/L	0.02	0.01	ClearN	11/13/97	200.7
Copper,Total	1.51	mg/L	0.02	0.01	ClearN	11/13/97	200.7
Lead,Total	<0.1	mg/L	0.1	0.05	ClearN	11/13/97	200.7
Mercury,Total	<0.001	mg/L	0.001	0.0002	ShaneD	11/21/97	245.1
Nickel,Total	0.24	mg/L	0.02	0.01	ClearN	11/13/97	200.7
Selenium,Total	0.37	mg/L	0.1	0.05	ClearN	11/13/97	200.7
Silver,Total	<0.02	mg/L	0.02	0.01	ClearN	11/13/97	200.7
Thallium,Total	0.58	mg/L	0.2	0.1	ClearN	11/13/97	200.7
Zinc,Total	0.74	mg/L	0.02	0.01	ClearN	11/13/97	200.7

QUALITY ASSURANCE DATA
EP TOXICITY and/or LEACHING METHOD

Parameter	% Recovery - Accuracy		% RSD Precision Analysis
	USEPA EMSL QC Sample	Matrix Spike	
Arsenic *	83.7	-	
Barium *	117.5	-	
Cadmium *	111.	-	
Chromium *	110.8	-	
Copper	108.2		
Iron	102.4		
Lead *	120.2	-	
Manganese	100.6		
Mercury *	116.7	-	
Nickel	109.2		
Selenium *	103.5		
Silver *	127.	-	
Sodium	94.8		
Zinc	103.4		
Chlorides	102.5		8.8
Cyanide, Total	99.3		
Fluoride	76.9		
PCB			
pH			
Phenols	94.4		
Sulfate	93.4		
Sulfide, Total			
TDS			
TOC			
TOH			

* These metals are analyzed by the Method of Standard Additions

REGULATORY LIMITS (ppm)

Parameter	EP Toxicity RCRA	State of Indiana Leaching Method Foundry Waste Types Only A	B	C	D
Arsenic *	5.0	0.05	0.5	1.25	5.0
Barium *	100	1.	10.	25.	100.
Cadmium *	1.0	0.01	0.1	0.25	1.0
Chromium *	5.0	0.05	0.5	1.25	5.0
Lead *	5.0	0.05	0.5	1.25	5.0
Mercury *	0.2	0.002	0.02	0.05	0.2
Selenium *	1.0	0.01	0.1	0.25	1.0
Silver *	5.0	0.05	0.5	1.25	5.0
Chlorides	-	250.	2500.	6250.	**
Copper	-	0.25	2.5	6.25	**
Cyanide, Total	-	0.2	2.	5.	**
Fluoride	-	1.4	14.	35.	**
Iron	-	1.5	15.	**	**
Manganese	-	0.05	0.5	**	**
Nickel	-	0.2	2.	5.	**
PCB	-	-	-	-	-
pH	-	6.0 - 9.0	5 - 10	4 - 11	**
Phenols	-	0.3	3.	7.5	**
Sodium	-	250.	2500.	6250.	**
Sulfate	-	250.	2500.	6250.	**
Sulfide, Total	-	-	5.	12.5	**
TDS	-	500.	5000.	12500.	**
TOC	-	-	-	-	-
TOH	-	-	-	-	-
Zinc	-	2.5	25.	62.5	**

* Limits shown are based on EP Toxicity Analysis Data

** Testing is not required

ANALYTICAL REPORT SHEET
EP TOXICITY - METALS ANALYSIS

EIS Lab Number	780F			
Client Description	NORTH SETTLING TANK #153			
% Solids	75.1			
Weight Raw Sample (g)	107.5			
Filters Used	AP15			
	HAWP			
Initial Extract pH	9.0			
Final Extract pH (24 hr)	4.9			
Acid Added (24hr) (ml)	29.9			
Final Extract pH (28hr)	—			
Acid Added (4hr) (ml)	—			
Total Acid Added (ml)	29.9			
Total DI Water Added (ml)	1585.			
Original Liquid Phase (ml)	23.			
Final Extract Volume (ml)	1637.9			
RCRA Metals				
Arsenic (PPM)	<0.01			
Barium (PPM)	<0.05			
Cadmium (PPM)	<0.01			
Chromium (PPM)	<0.05			
Lead (PPM)	<0.05			
Mercury (PPM)	<0.002			
Selenium (PPM)	<0.005			
Silver (PPM)	<0.05			

Note: Tables of pH adjustments with time have been extracted from the EIS sample work sheets and are reproduced in the section of this report containing laboratory bench sheets.

ANALYTICAL REPORT SHEET

STATE OF INDIANA - LEACHING METHOD ANALYSIS

EIS Lab Number	780F			
Client Description	NORTH SETTLING TANK #133			
Weigh Raw Sample (g)	110.8			
Filters Used	AP 15			
	AP25			
	HAWP			
DI Water Added (ml)	2216			
PARAMETERS				
Copper (ppm)	0.12			
Iron (ppm)	0.14			
Manganese (ppm)	< 0.03			
Nickel (ppm)	< 0.05			
Sodium (ppm)	22.			
Zinc (ppm)	0.06			
Chlorides (ppm)	8			
Cyanide, Total (ppm)	< 0.005			
Fluoride (ppm)	0.38			
PCB (ppm)				
Phenols (ppm)	0.007			
Sulfate (ppm)	8.			
Sulfide, Total (ppm)	2.2			
TDS (ppm)	74.			
TOC (ppm)				
TOH (ppm)				
ph after 24 hours	8.6			

Note: The reverse side of this sheet lists reference methods utilized

EIS ENVIRONMENTAL ENGINEERS, INC.
1701 North Ironwood Drive • South Bend, Indiana 46635 • 219/277-5715

WASTE CLASSIFICATION ANALYSIS REPORT

Client: The Dalton Foundries	Sample Description
ATTN: J. R. Canan	EIS Analysis No.: 781F
Date Sampled: 2-28-86	South Settling Tank
Date Received: 3-3-86	#154
Date Forwarded: 4-29-86	
Purchase Order: 122 229	

This report presents results of waste classification through laboratory analysis procedures. The following references were utilized, as needed, in the evaluation procedures herein.

- "Test Methods for the Evaluation of Solid Waste - Physical/Chemical Methods" USEPA SW-846, July 1982, 2nd Edition
- "Methods for Chemical Analysis of Water and Wastes" EPA 600/4-79-020
- State of Indiana "Leaching Method"

The specific client requested analysis for the samples described above were the following.

EP Toxicity - Metals	X	State of Indiana Leaching Method	X
EP Toxicity - Organics		Volatile Organic Compounds	
Ignitability		Semi-volatile Organic Compounds (Base/Neutrals Acid Fraction)	
Corrosivity			
Reactivity		PCB ____ Pesticides	
Additional			

Materials constituting this report packet include laboratory analysis bench sheets. These bench sheets are required by the State of Indiana as an integral part of the Waste Classification Analysis Report. Certain sections of this report may not pertain to your samples but do constitute a part of the EIS Report Packet. All results are hand entered to eliminate data transfer errors.

Andris Rozite

Andris Rozite, Laboratory Director

QUALITY ASSURANCE DATA
EP TOXICITY and/or LEACHING METHOD

Parameter	% Recovery - Accuracy		% RSD Precision Analysis
	USEPA EMSL QC Sample	Matrix Spike	
Arsenic *	83.7	-	
Barium *	117.5	-	
Cadmium *	111.	-	
Chromium *	110.8	-	
Copper	108.2		
Iron	102.4		
Lead *	120.2	-	
Manganese	100.6		
Mercury *	116.7	-	
Nickel	109.2		
Selenium *	103.5		
Silver *	127.	-	
Sodium	94.8		
Zinc	103.4		
Chlorides	102.5		
Cyanide, Total	99.3		
Fluoride	76.9		
PCB			
pH			
Phenols	94.4		
Sulfate	93.4		
Sulfide, Total			
TDS			
TOC			
TOH			

* These metals are analyzed by the Method of Standard Additions

REGULATORY LIMITS (ppm)

Parameter	EP Toxicity RCRA	State of Indiana Leaching Method Foundry Waste Types Only A	B	C	D
Arsenic *	5.0	0.05	0.5	1.25	5.0
Barium *	100	1.	10.	25.	100.
Cadmium *	1.0	0.01	0.1	0.25	1.0
Chromium *	5.0	0.05	0.5	1.25	5.0
Lead *	5.0	0.05	0.5	1.25	5.0
Mercury *	0.2	0.002	0.02	0.05	0.2
Selenium *	1.0	0.01	0.1	0.25	1.0
Silver *	5.0	0.05	0.5	1.25	5.0
Chlorides	-	250.	2500.	6250.	**
Copper	-	0.25	2.5	6.25	**
Cyanide, Total	-	0.2	2.	5.	**
Fluoride	-	1.4	14.	35.	**
Iron	-	1.5	15.	**	**
Manganese	-	0.05	0.5	**	**
Nickel	-	0.2	2.	5.	**
PCB	-	-	-	-	-
pH	-	6.0 - 9.0	5 - 10	4 - 11	**
Phenols	-	0.3	3.	7.5	**
Sodium	-	250.	2500.	6250.	**
Sulfate	-	250.	2500.	6250.	**
Sulfide, Total	-	-	5.	12.5	**
TDS	-	500.	5000.	12500.	**
TOC	-	-	-	-	-
TOH	-	-	-	-	-
Zinc	-	2.5	25.	62.5	**

* Limits shown are based on EP Toxicity Analysis Data.

** Testing is not required

ANALYTICAL REPORT SHEET
EP TOXICITY - METALS ANALYSIS

EIS Lab Number	781F			
Client Description	South Settling Tank #154			
% Solids	80.8			
Weight Raw Sample (g)	106.2			
Filters Used	AP15			
	HAWP			
Initial Extract pH	9.2			
Final Extract pH (24 hr)	4.8			
Acid Added (24hr) (ml)	13.4			
Final Extract pH (28hr)	—			
Acid Added (4hr) (ml)	—			
Total Acid Added (ml)	13.4			
Total DI Water Added (ml)	1703.			
Original Liquid Phase (ml)	15.			
Final Extract Volume (ml)	1731.4			
RCRA Metals				
Arsenic (PPM)	<0.01			
Barium (PPM)	0.6			
Cadmium (PPM)	<0.01			
Chromium (PPM)	<0.05			
Lead (PPM)	<0.05			
Mercury (PPM)	<0.002			
Selenium (PPM)	0.005			
Silver (PPM)	<0.05			

Note: Tables of pH adjustments with time have been extracted from the EIS sample work sheets and are reproduced in the section of this report containing laboratory bench sheets.

LEACHING METHOD ANALYTICAL REFERENCES

LEACHATE FORMATION

The leaching procedure utilized, and the equipment employed, is described on the report sheet titled SUPPLEMENTARY DATA EXTRACTION PROCEDURE TOXICITY TEST.

ANALYTICAL METHODS

PARAMETER	SW-846 Method #	EPA 600/4-79-020 Method #
Chlorides		325.3
Copper	3010 / 7210	
Cyanide, Total	9010	
Fluoride		340.2
Iron		236.1
Manganese		243.1
Nickel	3010 / 7520	
PCB	8080	
pH		150.1
Phenols		420.2
Sodium		273.1
Sulfate		374.4
Sulfide, Total	9030	
TDS		160.2
TOC	9060	
TOH	9020	
Zinc	3010 / 7950	

ANALYTICAL REPORT SHEET

STATE OF INDIANA - LEACHING METHOD ANALYSIS

EIS Lab Number		781F			
Client Description		South Settling Tank #154			
* * * * * * * * * * * *		* * * * * *	* * * * * *	* * * * * *	* * * * * *
Weigh Raw Sample (g)		111.5			
Filters Used		AP15			
		HAWP			
DI Water Added (ml)		2230			
* * * * * * * * * * * *		* * * * * *	* * * * * *	* * * * * *	* * * * * *
PARAMETERS					
Copper	(ppm)	0.06			
Iron	(ppm)	<0.10			
Manganese	(ppm)	<0.03			
Nickel	(ppm)	<0.05			
Sodium	(ppm)	11.			
Zinc	(ppm)	<0.03			
Chlorides	(ppm)	5			
Cyanide, Total	(ppm)	<0.005			
Fluoride	(ppm)	0.24			
PCB	(ppm)				
Phenols	(ppm)	0.005			
Sulfate	(ppm)	8			
Sulfide, Total	(ppm)	1.4			
TDS	(ppm)	88			
TOC	(ppm)				
TOH	(ppm)				
ph after 24 hours		8.0			

Note: The reverse side of this sheet lists reference methods utilized

WASTE CHARACTERIZATION ANALYSIS REPORT

Client: The Dalton Foundries, Inc. P. O. Box 1388 Warsaw, IN 46580 **Attn:** J. R. Canan	**Sample Description** **EIS Analysis No.:** 3320H - 3330H 3320H - #489 3326H - #495 3321H - #490 3327H - #496 3322H - #491 3328H - #497 3323H - #492 3329H - #498 3324H - #493 3330H - #499 3325H - #494
Date Sampled:	
Collected By: Dalton	
Date Received: 07-11-88	
Date Forwarded: 11-08-88	
Purchase Order: 140905	**EIS Project No:**

This report presents results of waste characterization through laboratory analysis procedures. The following references were utilized, as needed, in the evaluation procedures herein.

- "Test Methods for the Evaluation of Solid Waste - Physical/Chemical Methods" USEPA SW-846, November 1986, 3rd Edition
- "Methods for Chemical Analysis of Water and Wastes" EPA 600/4-79-020
- State of Indiana "Leaching Methods"

The specific client requested analysis for the samples described above were the following:

EP Toxicity-Metals	✓	TCLP-Metals		Ind Leaching	✓
EP Toxicity-Pesticides		TCLP-VOC (ZHE)		Total Metals	
EP Toxicity-Herbicides		TCLP-Pesticides			
Corrosivity		TCLP-Herbicides		ADDITIONAL	
Reactivity (CN & S)		TCLP-Base/Neutrals			
Ignitability		TCLP-Acid Fraction			

Materials constituting this report packet include laboratory analysis bench sheets. These bench sheets are required by the State of Indiana as an integral part of the Waste Characterization Analysis Report. Certain sections of this report may not pertain to your samples but do constitute a part of the EIS Report Packet. All results are hand entered to eliminate data transfer errors.

Andris Rozite, Laboratory Director

2003
Rev (06-03-88)

QUALITY ASSURANCE DATA
EP TOXICITY and/or LEACHING METHOD

Parameter	% Recovery - Accuracy		% RSD Precision Analysis	
	USEPA EMSL QC Sample	Matrix Spike		
Arsenic *	94.8	-	0	(3323H)
Barium *	103, 99.1, 100.7	-	0	(3325H) (3327H)
Cadmium *	112.8	-	0	(3327H)
Chromium *	101.4, 96.9	-	0	(3325H)
Copper	101.9, 102.9		4.5	(3327H)
Iron	102, 101.8		0	(3327H)
Lead *	114, 81.5	-	4.8	(3327H)
Manganese	103.3, 102.1		0	(3327H)
Mercury *	98, 96.5	-	0	(3321H)
Nickel	95.7, 98.4, 103.6		0	(3325H) (3327H)
Selenium *	89.8		0	(3323H)
Silver *	98.8, 97.6	-	0	(3327H)
Sodium	102.9, 104.1		0.5	(3327H)
Zinc	99.2, 98.4		0	(3327H)
Chlorides	102		0	(3322H)
Cyanide, Total	85		0	(3329H)
Fluoride	113.2	101 (3321H)	4.9	(3327H)
PCB				
pH			0	(3324H)
Phenols	80.2			
Sulfate	98.2		1.1	(3324H)
Sulfide, Total			5.2	(3324H)
TDS			8.1	(3328H)
TOC				
TOH				

* These metals are analyzed by the Method of Standard Additions

REGULATORY LIMITS (ppm)

Parameter	EP Toxicity RCRA	State of Indiana Leaching Method Foundry Waste Types Only A	B	C	D
Arsenic *	5.0	0.05	0.5	1.25	5.0
Barium *	100	1.	10.	25.	100.
Cadmium *	1.0	0.01	0.1	0.25	1.0
Chromium *	5.0	0.05	0.5	1.25	5.0
Lead *	5.0	0.05	0.5	1.25	5.0
Mercury *	0.2	0.002	0.02	0.05	0.2
Selenium *	1.0	0.01	0.1	0.25	1.0
Silver *	5.0	0.05	0.5	1.25	5.0
Chlorides	-	250.	2500.	6250.	**
Copper	-	0.25	2.5	6.25	**
Cyanide, Total	-	0.2	2.	5.	**
Fluoride	-	2.4	24.	60.	**
Iron	-	1.5	15.	**	**
Manganese	-	0.05	0.5	**	**
Nickel	-	0.2	2.	5.	**
PCB	-	-	-	-	-
pH	-	6.0 - 9.0	5 - 10	4 - 11	**
Phenols	-	0.3	3.	7.5	**
Sodium	-	250.	2500.	6250.	**
Sulfate	-	250.	2500.	6250.	**
Sulfide, Total	-	1.	5.	12.5	**
TDS	-	500.	5000.	12500.	**
TOC	-	-	-	-	-
TOH	-	-	-	-	-
Zinc	-	2.5	25.	62.5	**

* Limits shown are based on EP Toxicity Analysis Data

** Testing is not required

ANALYTICAL REPORT SHEET
EP TOXICITY - METALS ANALYSIS

EIS Lab Number	3320H	3321H	3322H	3323H
Client Description	#489 #1 Dust Collector 5-16-88	#490 #2 Dust Collector 5-16-88	#491 #4 Dust Collector 5-16-88	#492 #6 Dust Collector 5-16-88
% Solids	100	100	100	100
Weight Raw Sample (g)	100.1	100.1	100.4	100.5
Filters Used	AP15	AP15	AP15	AP15
	HAWP	HAWP	HAWP	HAWP
Initial Extract pH	9.6	9.0	8.0	8.6
Final Extract pH (24 hr)	4.8	7.3	7.3	7.3
Acid Added (24hr)(ml)	70.4	400.4	401.6	402.
Final Extract pH (28hr)	—	—	—	—
Acid Added (4hr)(ml)	—	—	—	—
Total Acid Added (ml)	70.4	400.4	401.6	402.
Total DI Water Added (ml)	1932	1602	1606	1608
Original Liquid Phase(ml)	0	0	0	0
Final Extract Volume (ml)	2002.	2002.	2008.	2010.
RCRA Metals				
Arsenic (PPM)	<0.01	<0.01	<0.01	<0.01
Barium (PPM)	<0.5	0.7	<0.5	0.6
Cadmium (PPM)	<0.01	<0.01	<0.01	<0.01
Chromium (PPM)	<0.05	<0.05	0.09	0.08
Lead (PPM)	0.27	<0.01	<0.01	<0.01
Mercury (PPM)	<0.001	<0.001	<0.001	<0.001
Selenium (PPM)	<0.005	<0.005	<0.005	<0.005
Silver (PPM)	<0.05	<0.05	<0.05	<0.05

Note: Tables of pH adjustments with time have been extracted from the EIS sample work sheets and are reproduced in the section of this report containing laboratory bench sheets.

ANALYTICAL REPORT SHEET

ADDITIONAL TESTS PERFORMED ON EP TOXICITY EXTRACT

EIS Lab Number	3320H	3321H	3322H	3323H
Client Description	#489 #1 Dust collector 5-16-88	#490 #2 Dust collector 5-16-88	#491 #4 Dust collector 5-16-88	#492 #6 Dust collector 5-16-88
Weigh Raw Sample (g)				
Filters Used				
DI Water Added (ml)				
PARAMETERS				
Copper (ppm)				
Iron (ppm)				
Manganese (ppm)				
Nickel (ppm)	<0.1	<0.1	<0.1	0.13
Sodium (ppm)				
Zinc (ppm)				
Chlorides (ppm)				
Cyanide, Total (ppm)				
Fluoride (ppm)				
PCB (ppm)				
Phenols (ppm)				
Sulfate (ppm)				
Sulfide, Total (ppm)				
TDS (ppm)				
TOC (ppm)				
TOH (ppm)				
ph after 24 hours				

Note: The reverse side of this sheet lists reference methods utilized

ANALYTICAL REPORT SHEET

STATE OF INDIANA - LEACHING METHOD ANALYSIS

EIS Lab Number	3320H	3321H	3322H	3323H
Client Description	#489-#1 Dust Collector 5-16-88	#490-#2 Dust Collector 5-16-88	#491-#4 Dust collector 5-16-88	#492-#6 Dust collector 5-16-88
Weight Raw Sample (g)	100.6	100.7	100	100.4
Filters Used	AP15	AP15	AP15	AP15
	HAWP	HAWP	HAWP	HAWP
DI Water Added (ml)	2012	2014	2000	2008
PARAMETERS				
Copper (ppm)	0.32	0.18	0.17	0.14
Iron (ppm)	0.28	<0.1	<0.1	<0.1
Manganese (ppm)	0.07	<0.05	<0.05	<0.05
Nickel (ppm)	<0.1	<0.1	<0.1	<0.1
Sodium (ppm)	113.	18.	10.	18.
Zinc (ppm)	0.08	<0.05	0.08	<0.05
Chlorides (ppm)	23	8.	<0.8	1.
Cyanide, Total (ppm)	0.02	<0.005	<0.005	<0.005
Fluoride (ppm)	0.86	0.66	9.4	14.5
PCB (ppm)				
Phenols (ppm)	0.05	0.13	0.21	0.15
Sulfate (ppm)	127.	12.	<5.	<5.
Sulfide, Total (ppm)	0.3	<0.2	<0.2	<0.2
TDS (ppm)	374.	74	36.	52.
Barium (ppm)	<0.5	<0.5	<0.5	<0.5
Boron (ppm)	0.21	0.20	<0.1	<0.1
pH after 24 hours	7.7	10.4	9.8	10.0

Note: The reverse side of this sheet lists reference methods utilized

2019
Revised (11-07-88)

LEACHING METHOD ANALYTICAL REFERENCES

LEACHATE FORMATION

The leaching procedure utilized, and the equipment employed, is described on the report sheet titled SUPPLEMENTARY DATA EXTRACTION PROCEDURE TOXICITY TEST. The only deviation from the description is that NO PH adjustments were made.

ANALYTICAL METHODS

PARAMETER	SW-846 Method #	EPA 600/4-79-020 Method #
Chlorides		325.3
Copper	3010 / 7210	
Cyanide, Total	9010	
Fluoride		340.2
Iron		236.1
Manganese		243.1
Nickel	3010 / 7520	
PCB	8080	
pH		150.1
Phenols		420.2
Sodium		273.1
Sulfate		374.4
Sulfide, Total	9030	
TDS		160.2
TOC	9060	
TOH	9020	
Zinc	3010 / 7950	

ANALYTICAL REPORT SHEET
EP TOXICITY - METALS ANALYSIS

EIS Lab Number	3324H	3325H	3326H	3327H
Client Description	#493 #9 Dust Collector 5-16-88	#494 Core Sand Composite 7-7-88	#495 waste Sand 7-7-98	#496 Slag 5-18-88
% Solids	100	100	100	100
Weight Raw Sample (g)	100.4	100.2	100.3	100.1
Filters Used	AP15	AP15	AP15	AP15
	HAWP	HAWP	HAWP	HAWP
Initial Extract pH	9.5	6.2	8.5	10.5
Final Extract pH (24 hr)	5.0	5.1	5.3	6.7
Acid Added (24hr)(ml)	141.6	0.8	4.2	400.4
Final Extract pH (28hr)	—	—	4.9	—
Acid Added (4hr)(ml)	—	—	7	—
Total Acid Added (ml)	141.6	0.8	11.2	400.4
Total DI Water Added (ml)	1866	2003	1995	1602
Original Liquid Phase(ml)	0	0	0	0
Final Extract Volume (ml)	2008	2004.	2006.	2002.
RCRA Metals				
Arsenic (PPM)	<0.01	<0.01	<0.01	<0.01
Barium (PPM)	<0.5	<0.5	<0.5	0.6
Cadmium (PPM)	<0.01	<0.01	<0.01	<0.01
Chromium (PPM)	<0.05	<0.05	<0.05	<0.05
Lead (PPM)	0.07	<0.01	<0.01	0.01
Mercury (PPM)	<0.001	<0.001	<0.001	<0.001
Selenium (PPM)	<0.005	<0.005	<0.005	<0.005
Silver (PPM)	<0.05	<0.05	<0.05	<0.05

Note: Tables of pH adjustments with time have been extracted from the EIS sample work sheets and are reproduced in the section of this report containing laboratory bench sheets.

ANALYTICAL REPORT SHEET

ADDITIONAL TESTS PERFORMED ON EP TOXICITY EXTRACT

EIS Lab Number	3324H	3325H	3326H	3327H
Client Description	#493 #9 Dust collector 5-16-88	#494 Core Sand Composite 7-7-88	#495 Waste Sand 7-7-88	#496 Slag 5-18-88
Weigh Raw Sample (g)				
Filters Used				
DI Water Added (ml)				
PARAMETERS				
Copper (ppm)				
Iron (ppm)				
Manganese (ppm)				
Nickel (ppm)	0.39	< 0.1	< 0.1	< 0.1
Sodium (ppm)				
Zinc (ppm)				
Chlorides (ppm)				
Cyanide, Total (ppm)				
Fluoride (ppm)				
PCB (ppm)				
Phenols (ppm)				
Sulfate (ppm)				
Sulfide, Total (ppm)				
TDS (ppm)				
TOC (ppm)				
TOH (ppm)				
ph after 24 hours				

Note: The reverse side of this sheet lists reference methods utilized

LEACHING METHOD ANALYTICAL REFERENCES

LEACHATE FORMATION

The leaching procedure utilized, and the equipment employed, is described on the report sheet titled SUPPLEMENTARY DATA EXTRACTION PROCEDURE TOXICITY TEST.

ANALYTICAL METHODS

PARAMETER	SW-846 Method #	EPA 600/4-79-020 Method #
Chlorides		325.3
Copper	3010 / 7210	
Cyanide, Total	9010	
Fluoride		340.2
Iron		236.1
Manganese		243.1
Nickel	3010 / 7520	
PCB	8080	
pH		150.1
Phenols		420.2
Sodium		273.1
Sulfate		374.4
Sulfide, Total	9030	
TDS		160.2
TOC	9060	
TOH	9020	
Zinc	3010 / 7950	

ANALYTICAL REPORT SHEET

STATE OF INDIANA - LEACHING METHOD ANALYSIS

EIS Lab Number	3324H	3325H	3326 H	3327H
Client Description	#493 - #9 Dust Collector 5-16-88	#494 - Fore Sand Composite 7-7-88	#495 - Waste Sand 7-7-98	#496 - Slag 5-18-88
* * * * * * * * * * * *	* * * * * *	* * * * * *	* * * * * *	* * * * * *
Weight Raw Sample (g)	100.4	100.9	100.6	100.3
Filters Used	AP15	AP15	AP15	AP15
	HAWP	HAWP	HAWP	HAWP
DI Water Added (ml)	2008	2018	2012	2006
* * * * * * * * * * * * PARAMETERS	* * * * * *	* * * * * *	* * * * * *	* * * * * *
Copper (ppm)	0.08	0.16	0.12	0.12
Iron (ppm)	0.14	0.17	0.24	<0.1
Manganese (ppm)	<0.05	<0.05	<0.05	<0.05
Nickel (ppm)	<0.1	<0.1	<0.1	<0.1
Sodium (ppm)	64.	<5.	10.	20.
Zinc (ppm)	0.05	0.09	<0.05	<0.05
Chlorides (ppm)	12.	3.	4.	41.
Cyanide, Total (ppm)	0.01	<0.005	0.006	<0.005
Fluoride (ppm)	1.4	0.2	0.34	1.4
PCB (ppm)				
Phenols (ppm)	0.11	3.5	0.19	0.06
Sulfate (ppm)	47.	<5.	8.	37.
Sulfide, Total (ppm)	0.27	<0.2	<0.2	<0.2
TDS (ppm)	202.	56.	56.	186.
Barium (ppm)	<0.5	<0.5	<0.5	<0.5
Boron (ppm)	0.20	<0.1	<0.1	<0.1
pH after 24 hours	8.3	7.5	7.8	10.8

Note: The reverse side of this sheet lists reference methods utilized

LEACHING METHOD ANALYTICAL REFERENCES

LEACHATE FORMATION

The leaching procedure utilized, and the equipment employed, is described on the report sheet titled SUPPLEMENTARY DATA EXTRACTION PROCEDURE TOXICITY TEST. The only deviation from the description is that NO PH adjustments were made.

ANALYTICAL METHODS

PARAMETER	SW-846 Method #	EPA 600/4-79-020 Method #
Chlorides		325.3
Copper	3010 / 7210	
Cyanide, Total	9010	
Fluoride		340.2
Iron		236.1
Manganese		243.1
Nickel	3010 / 7520	
PCB	8080	
pH		150.1
Phenols		420.2
Sodium		273.1
Sulfate		374.4
Sulfide, Total	9030	
TDS		160.2
TOC	9060	
TOH	9020	
Zinc	3010 / 7950	

ANALYTICAL REPORT SHEET
EP TOXICITY - METALS ANALYSIS

EIS Lab Number	3328H	3329H	3330H	
Client Description	#497 North Settling Tank 4-13-89	#498 East Settling Tank 4-13-89	#499 South Settling Tank 4-13-89	
% Solids	89.4	70.2	100	
Weight Raw Sample (g)	100.7	102.6	100.1	
Filters Used	AP15	AP15	AP15	
	HAWP	HAWP	HAWP	
Initial Extract pH	9.5	8.2	9.4	
Final Extract pH (24 hr)	5.0	5.2	4.9	
Acid Added (24hr)(ml)	70.2	48.	20.4	
Final Extract pH (28hr)	—	—	—	
Acid Added (4hr)(ml)	—	—	—	
Total Acid Added (ml)	70.2	48.	20.4	
Total DI Water Added (ml)	1731	1392.	1982	
Original Liquid Phase(ml)	4.5	28.5	0	
Final Extract Volume (ml)	1806.	1468.	2002.	
RCRA Metals				
Arsenic (PPM)	<0.01	<0.01	<0.01	
Barium (PPM)	0.6	<0.5	<0.5	
Cadmium (PPM)	<0.01	0.03	<0.01	
Chromium (PPM)	<0.05	<0.05	<0.05	
Lead (PPM)	0.01	0.02	<0.01	
Mercury (PPM)	<0.001	<0.001	<0.001	
Selenium (PPM)	<0.005	<0.005	<0.005	
Silver (PPM)	<0.05	<0.05	<0.05	

Note: Tables of pH adjustments with time have been extracted from the EIS sample work sheets and are reproduced in the section of this report containing laboratory bench sheets.

ANALYTICAL REPORT SHEET

ADDITIONAL TESTS PERFORMED ON EP TOXICITY EXTRACT

EIS Lab Number	3328H	3329H	3330H	
Client Description	#497 North Settling Tank 4-13-88	#498 East Settling Tank 4-13-88	#499 South Settling Tank 4-13-88	
Weigh Raw Sample (g)				
Filters Used				
DI Water Added (ml)				
PARAMETERS				
Copper (ppm)				
Iron (ppm)				
Manganese (ppm)				
Nickel (ppm)	<0.1	0.10	<0.1	
Sodium (ppm)				
Zinc (ppm)				
Chlorides (ppm)				
Cyanide, Total (ppm)				
Fluoride (ppm)				
PCB (ppm)				
Phenols (ppm)				
Sulfate (ppm)				
Sulfide, Total (ppm)				
TDS (ppm)				
TOC (ppm)				
TOH (ppm)				
ph after 24 hours				

Note: The reverse side of this sheet lists reference methods utilized

LEACHING METHOD ANALYTICAL REFERENCES

LEACHATE FORMATION

The leaching procedure utilized, and the equipment employed, is described on the report sheet titled SUPPLEMENTARY DATA EXTRACTION PROCEDURE TOXICITY TEST.

ANALYTICAL METHODS

PARAMETER	SW-846 Method #	EPA 600/4-79-020 Method #
Chlorides		325.3
Copper	3010 / 7210	
Cyanide, Total	9010	
Fluoride		340.2
Iron		236.1
ınganese		243.1
Nickel	3010 / 7520	
PCB	8080	
pH		150.1
Phenols		420.2
Sodium		273.1
Sulfate		374.4
Sulfide, Total	9030	
TDS		160.2
TOC	9060	
TOH	9020	
Zinc	3010 / 7950	

ANALYTICAL REPORT SHEET

STATE OF INDIANA - LEACHING METHOD ANALYSIS

EIS Lab Number	3328H	3329H	3330H	
Client Description	#497 - N. Settling Tank 4-13-88	#498 - E. Settling Tank 4-13-88	#499 - S. Settling Tank 4-13-88	
* * * * * * * * * * * *	* * * * * *	* * * * * *	* * * * * *	* * * * * *
Weight Raw Sample (g)	106.6	100.1	101.2	
Filters Used	AP15	AP15	AP15	
	HAWP	HAWP	HAWP	
DI Water Added (ml)	2132	2002	2024	
* * * * * * * * * * * *	* * * * * *	* * * * * *	* * * * * *	* * * * * *
PARAMETERS				
Copper (ppm)	0.10	0.07	0.14	
Iron (ppm)	0.16	0.21	0.12	
Manganese (ppm)	<0.05	<0.05	<0.05	
Nickel (ppm)	<0.1	<0.1	<0.1	
Sodium (ppm)	34.	34.	12.	
Zinc (ppm)	<0.05	<0.05	<0.05	
Chlorides (ppm)	13.	16.	7.	
Cyanide, Total (ppm)	<0.005	<0.005	0.006	
Fluoride (ppm)	0.45	0.56	0.22	
PCB (ppm)				
Phenols (ppm)	0.02	0.01	<0.005	
Sulfate (ppm)	5.	29.	<5.	
Sulfide, Total (ppm)	<0.2	0.2	<0.2	
TDS (ppm)	87.	110.	42.	
Barium (ppm)	<0.5	<0.5	<0.5	
Boron (ppm)	<0.1	0.12	<0.1	
pH after 24 hours	9.2	8.2	7.4	

Note: The reverse side of this sheet lists reference methods utilized

2019
Revised (11-07-88)

LEACHING METHOD ANALYTICAL REFERENCES

LEACHATE FORMATION

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ANALYTICAL METHODS

PARAMETER	SW-846 Method #	EPA 600/4-79-020 Method #
Chlorides		325.3
Copper	3010 / 7210	
Cyanide, Total	9010	
Fluoride		340.2
Iron		236.1
Manganese		243.1
Nickel	3010 / 7520	
PCB	8080	
pH		150.1
Phenols		420.2
Sodium		273.1
Sulfate		374.4
Sulfide, Total	9030	
TDS		160.2
TOC	9060	
TOH	9020	
Zinc	3010 / 7950	

FOUNDRY WASTE CLASSIFICATION

Client Sample Description	#489 #1 Dust Collector 5-16-88	#490 #2 Dust Collector 5-16-88	#491 #4 Dust Collector 5-16-88	#492 #6 Dust Collector 5-16-88
Waste Type Assigned	B	C	B	B
Basis for Assignment	Pb, Cu, Mn	pH	Cr, pH Fluoride	Cr, pH Fluoride

The State of Indiana has set forth catagories for classification of Foundry wastes into four (4) possible waste types. The classification is based on laboratory test results and the comparison of these results with maximum contaminant limits for each catagory. Foundry waste type limits are presented in the section of this report titled Regulatory Limits.

If EIS has assigned a waste type classification for samples identified above, the assignment was made on the following basis.

- Statistical calculations were used only if the test result (for any parameter) was within ± 20% of the Regulatory Limit. If no parameter results were within this range, simple comparisons were made.
- The parameter placing a waste into a certain Waste Type has been shown.
- If statistical calculations were required, they were made as follows:
  - A single sample only was received for analysis. Statistical calculations were based on laboratory analytical precision data. The precision data used was either historical or specifically generated on that sample. In either case, the number of samples was considered to be two (2).
  - Multiple samples representing the same waste stream were received for analysis. Calculations were based on the values generated by all of the samples.

The equations used for the statistical calculations are presented on the reverse side of this report sheet. These equations were taken from SW-846.

EQUATIONS	DEFINITIONS
1. $\overline{X} = \frac{\Sigma X}{n}$	X = Parameter result
2. $S\overline{X} = \frac{S}{\sqrt{n}}$	n = Number of results for a single parameter
3. $CI = \overline{X} \pm t_{.20} S \overline{X}$	$\overline{X}$ = Arithmetic Average
4. $CI \lesssim RL$	S = Standard Deviation of n-1
	$S\overline{X}$ = Standard error
	CI = Confidence Interval
	$t_{.20}$ = Students "t" test values at a probability of 0.2
	RL = Regulatory Limit

Explanation

Once the CI has been calculated, it is compared to the RL. If the CI is less than the applicable RL value, the parameter under consideration can be placed into the category defined by the RL. If it is equal to or greater than the RL, the parameter must be placed into the next higher waste type category.

Students "t" Test Values	
n-1	t.20
1	3.078
2	1.886
3	1.638
4	1.533
5	1.476
6	1.440
7	1.415

Calculations

FOUNDRY WASTE CLASSIFICATION

Client Sample Description	#493 #9 Dust Collector 5-16-88	#494 Core Sand 7-7-88	#495 Waste Sand 7-7-88	#496 Slag 5-18-88
Waste Type Assigned	B	C	A	C
Basis for Assignment	Pb	phenol		pH

The State of Indiana has set forth catagories for classification of Foundry wastes into four (4) possible waste types. The classification is based on laboratory test results and the comparison of these results with maximum contaminant limits for each catagory. Foundry waste type limits are presented in the section of this report titled Regulatory Limits.

If EIS has assigned a waste type classification for samples identified above, the assignment was made on the following basis.

- Statistical calculations were used only if the test result (for any parameter) was within ± 20% of the Regulatory Limit. If no parameter results were within this range, simple comparisons were made.
- The parameter placing a waste into a certain Waste Type has been shown.
- If statistical calculations were required, they were made as follows:
  - A single sample only was received for analysis. Statistical calculations were based on laboratory analytical precision data. The precision data used was either historical or specifically generated on that sample. In either case, the number of samples was considered to be two (2).
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2. $S\overline{X} = \frac{S}{\sqrt{n}}$	n = Number of results for a single parameter
3. $CI = \overline{X} \pm t_{.20} S \overline{X}$	$\overline{X}$ = Arithmetic Average
4. $CI \lesseqgtr RL$	S = Standard Deviation of n-1
	$S\overline{X}$ = Standard error
	CI = Confidence Interval
	$t_{.20}$ = Students "t" test values at a probability of 0.2
	RL = Regulatory Limit

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Once the CI has been calculated, it is compared to the RL. If the CI is less than the applicable RL value, the parameter under consideration can be placed into the category defined by the RL. If it is equal to or greater than the RL, the parameter must be placed into the next higher waste type category.

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n-1	t.20
1	3.078
2	1.886
3	1.638
4	1.533
5	1.476
6	1.440
7	1.415

Calculations

FOUNDRY WASTE CLASSIFICATION

Client Sample Description	#497 North Settling Tank 4-13-88	# 498 East Settling Tank 4-13-88	# 499 South Settling Tank 4-13-88	
Waste Type Assigned	B	B	A	
Basis for Assignment	pH	Cd		

The State of Indiana has set forth catagories for classification of Foundry wastes into four (4) possible waste types. The classification is based on laboratory test results and the comparison of these results with maximum contaminant limits for each catagory. Foundry waste type limits are presented in the section of this report titled Regulatory Limits.

If EIS has assigned a waste type classification for samples identified above, the assignment was made on the following basis.

- Statistical calculations were used only if the test result (for any parameter) was within ± 20% of the Regulatory Limit. If no parameter results were within this range, simple comparisons were made.
- The parameter placing a waste into a certain Waste Type has been shown.
- If statistical calculations were required, they were made as follows:
  - A single sample only was received for analysis. Statistical calculations were based on laboratory analytical precision data. The precision data used was either historical or specifically generated on that sample. In either case, the number of samples was considered to be two (2).
  - Multiple samples representing the same waste stream were received for analysis. Calculations were based on the values generated by all of the samples.

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1. $\bar{X} = \frac{\Sigma X}{n}$	X = Parameter result
2. $S\bar{X} = \frac{S}{\sqrt{n}}$	n = Number of results for a single parameter
3. $CI = \bar{X} \pm t_{.20} S \bar{X}$	$\bar{X}$ = Arithmetic Average
4. $CI \lesssim RL$	S = Standard Deviation of n-1
	$S\bar{X}$ = Standard error
	CI = Confidence Interval
	$t_{.20}$ = Students "t" test values at a probability of 0.2
	RL = Regulatory Limit

Explanation

Once the CI has been calculated, it is compared to the RL. If the CI is less than the applicable RL value, the parameter under consideration can be placed into the category defined by the RL. If it is equal to or greater than the RL, the parameter must be placed into the next higher waste type category.

Students "t" Test Values	
n-1	t.20
1	3.078
2	1.886
3	1.638
4	1.533
5	1.476
6	1.440
7	1.415

Calculations

EIS ENVIRONMENTAL ENGINEERS, INC.
1701 North Ironwood Drive • South Bend, Indiana 46635 • 219/277-5715

WASTE CLASSIFICATION ANALYSIS REPORT

Client: The Dalton Foundries ATTN: J. R. Canan Date Sampled: 2-24-86 Date Received: 3-3-86 Date Forwarded: 4-29-86 Purchase Order: 122 229	Sample Description EIS Analysis No.: 769F #1 Collector #142

This report presents results of waste classification through laboratory analysis procedures. The following references were utilized, as needed, in the evaluation procedures herein.

- "Test Methods for the Evaluation of Solid Waste - Physical/Chemical Methods" USEPA SW-846, July 1982, 2nd Edition
- "Methods for Chemical Analysis of Water and Wastes" EPA 600/4-79-020
- State of Indiana "Leaching Method"

The specific client requested analysis for the samples described above were the following.

EP Toxicity - Metals	X	State of Indiana Leaching Method	X
EP Toxicity - Organics		Volatile Organic Compounds	
Ignitability		Semi-volatile Organic Compounds (Base/Neutrals Acid Fraction)	
Corrosivity			
Reactivity		PCB ____ Pesticides	
Additional			

Materials constituting this report packet include laboratory analysis bench sheets. These bench sheets are required by the State of Indiana as an integral part of the Waste Classification Analysis Report. Certain sections of this report may not pertain to your samples but do constitute a part of the EIS Report Packet. All results are hand entered to eliminate data transfer errors.

Andris Rozite

Andris Rozite, Laboratory Director

QUALITY ASSURANCE DATA
EP TOXICITY and/or LEACHING METHOD

Parameter	% Recovery - Accuracy		% RSD Precision Analysis
	USEPA EMSL QC Sample	Matrix Spike	
Arsenic *	90.6	-	
Barium *	117.7	-	
Cadmium *	119.2	-	
Chromium *	105.6	-	
Copper	104.9		
Iron	105.5		
Lead *	110.8	-	
Manganese	105.4		
Mercury *	101.	-	
Nickel	105.7		
Selenium *	107.8		
Silver *	122.5	-	
Sodium	94.6		
Zinc	104.5		
Chlorides	102.5		
Cyanide, Total	99.3		
Fluoride	76.9		
PCB			
pH			
Phenols	94.4		
Sulfate	93.4		
Sulfide, Total			
TDS			
TOC			
TOH			

* These metals are analyzed by the Method of Standard Additions

REGULATORY LIMITS (ppm)

Parameter	EP Toxicity RCRA	State of Indiana Leaching Method Foundry Waste Types Only A	B	C	D
Arsenic *	5.0	0.05	0.5	1.25	5.0
Barium *	100	1.	10.	25.	100.
Cadmium *	1.0	0.01	0.1	0.25	1.0
Chromium *	5.0	0.05	0.5	1.25	5.0
Lead *	5.0	0.05	0.5	1.25	5.0
Mercury *	0.2	0.002	0.02	0.05	0.2
Selenium *	1.0	0.01	0.1	0.25	1.0
Silver *	5.0	0.05	0.5	1.25	5.0
Chlorides	-	250.	2500.	6250.	**
Copper	-	0.25	2.5	6.25	**
Cyanide, Total	-	0.2	2.	5.	**
Fluoride	-	1.4	14.	35.	**
Iron	-	1.5	15.	**	**
Manganese	-	0.05	0.5	**	**
Nickel	-	0.2	2.	5.	**
PCB	-	-	-	-	-
pH	-	6.0 - 9.0	5 - 10	4 - 11	**
Phenols	-	0.3	3.	7.5	**
Sodium	-	250.	2500.	6250.	**
Sulfate	-	250.	2500.	6250.	**
Sulfide, Total	-	-	5.	12.5	**
TDS	-	500.	5000.	12500.	**
TOC	-	-	-	-	-
?OH	-	-	-	-	-
Zinc	-	2.5	25.	62.5	**

* Limits shown are based on EP Toxicity Analysis Data

** Testing is not required

ANALYTICAL REPORT SHEET
EP TOXICITY - METALS ANALYSIS

EIS Lab Number	769F			
Client Description	#1 Dust collector #142			
% Solids	100			
Weight Raw Sample (g)	107.3			
Filters Used	AP15			
	HAWP			
Initial Extract pH	10.0			
Final Extract pH (24 hr)	5.1			
Acid Added (24hr)(ml)	69.2			
Final Extract pH (28hr)	—			
Acid Added (4hr)(ml)	—			
Total Acid Added (ml)	69.2			
Total DI Water Added (ml)	2077			
Original Liquid Phase(ml)	0			
Final Extract Volume (ml)	2146.2			
RCRA Metals				
Arsenic (PPM)	<0.01			
Barium (PPM)	<0.5			
Cadmium (PPM)	<0.01			
Chromium (PPM)	<0.05			
Lead (PPM)	<0.05			
Mercury (PPM)	<0.002			
Selenium (PPM)	<0.005			
Silver (PPM)	<0.05			

Note: Tables of pH adjustments with time have been extracted from the EIS sample work sheets and are reproduced in the section of this report containing laboratory bench sheets.

ANALYTICAL REPORT SHEET

STATE OF INDIANA - LEACHING METHOD ANALYSIS

EIS Lab Number	769F			
Client Description	#1 Dust Collector #142			
Weigh Raw Sample (g)	112.2			
Filters Used	AP15			
	HAWP			
DI Water Added (ml)	2224			
PARAMETERS				
Copper (ppm)	<0.05			
Iron (ppm)	0.32			
Manganese (ppm)	0.03			
Nickel (ppm)	<0.05			
Sodium (ppm)	162.			
Zinc (ppm)	0.33			
Chlorides (ppm)	28.			
Cyanide, Total (ppm)	0.02			
Fluoride (ppm)	0.95			
PCB (ppm)				
Phenols (ppm)	0.43			
Sulfate (ppm)	125.			
Sulfide, Total (ppm)	1.4			
TDS (ppm)	406.			
TOC (ppm)				
TOH (ppm)				
ph after 24 hours	8.8			

Note: The reverse side of this sheet lists reference methods utilized

EIS ENVIRONMENTAL ENGINEERS, INC.
1701 North Ironwood Drive • South Bend, Indiana 46635 • 219/277-5715

WASTE CLASSIFICATION ANALYSIS REPORT

Client: The Dalton Foundries	Sample Description
ATTN: J. R. Canan	EIS Analysis No.: 770F
Date Sampled: 2-24-86	#2 Collector
Date Received: 3-3-86	#143
Date Forwarded: 4-29-86	
Purchase Order: 122 229	

This report presents results of waste classification through laboratory analysis procedures. The following references were utilized, as needed, in the evaluation procedures herein.

- "Test Methods for the Evaluation of Solid Waste - Physical/Chemical Methods" USEPA SW-846, July 1982, 2nd Edition
- "Methods for Chemical Analysis of Water and Wastes" EPA 600/4-79-020
- State of Indiana "Leaching Method"

The specific client requested analysis for the samples described above were the following.

EP Toxicity - Metals	X	State of Indiana Leaching Method	X
EP Toxicity - Organics		Volatile Organic Compounds	
Ignitability		Semi-volatile Organic Compounds (Base/Neutrals Acid Fraction)	
Corrosivity			
Reactivity		PCB ____ Pesticides	
Additional			

Materials constituting this report packet include laboratory analysis bench sheets. These bench sheets are required by the State of Indiana as an integral part of the Waste Classification Analysis Report. Certain sections of this report may not pertain to your samples but do constitute a part of the EIS Report Packet. All results are hand entered to eliminate data transfer errors.

Andris Rozite

Andris Rozite, Laboratory Director

QUALITY ASSURANCE DATA
EP TOXICITY and/or LEACHING METHOD

Parameter	% Recovery - Accuracy		% RSD Precision Analysis
	USEPA EMSL QC Sample	Matrix Spike	
Arsenic *	90.6	-	
Barium *	117.7	-	9.4
Cadmium *	119.2	-	
Chromium *	105.6	-	
Copper	104.9		
Iron	105.5		
Lead *	110.8	-	
Manganese	105.4		
Mercury *	101	-	
Nickel	105.7		
Selenium *	107.8		
Silver *	122.5	-	
Sodium	94.6		
Zinc	104.5		
Chlorides	102.5		
Cyanide, Total	99.3		
Fluoride	76.9		
PCB			
pH			0
Phenols	94.4		
Sulfate	93.4		
Sulfide, Total			
TDS			2.4
TOC			
TOH			

* These metals are analyzed by the Method of Standard Additions

REGULATORY LIMITS (ppm)

Parameter	EP Toxicity RCRA	State of Indiana Leaching Method Foundry Waste Types Only A	B	C	D
Arsenic *	5.0	0.05	0.5	1.25	5.0
Barium *	100	1.	10.	25.	100.
Cadmium *	1.0	0.01	0.1	0.25	1.0
Chromium *	5.0	0.05	0.5	1.25	5.0
Lead *	5.0	0.05	0.5	1.25	5.0
Mercury *	0.2	0.002	0.02	0.05	0.2
Selenium *	1.0	0.01	0.1	0.25	1.0
Silver *	5.0	0.05	0.5	1.25	5.0
Chlorides	-	250.	2500.	6250.	**
Copper	-	0.25	2.5	6.25	**
Cyanide, Total	-	0.2	2.	5.	**
Fluoride	-	1.4	14.	35.	**
Iron	-	1.5	15.	**	**
Manganese	-	0.05	0.5	**	**
Nickel	-	0.2	2.	5.	**
PCB	-	-	-	-	-
pH	-	6.0 - 9.0	5 - 10	4 - 11	**
Phenols	-	0.3	3.	7.5	**
Sodium	-	250.	2500.	6250.	**
Sulfate	-	250.	2500.	6250.	**
Sulfide, Total	-	-	5.	12.5	**
TDS	-	500.	5000.	12500.	**
TOC	-	-	-	-	-
TOH	-	-	-	-	-
Zinc	-	2.5	25.	62.5	**

* Limits shown are based on EP Toxicity Analysis Data

** Testing is not required

ANALYTICAL REPORT SHEET
EP TOXICITY - METALS ANALYSIS

EIS Lab Number	770F			
Client Description	#2 collector #143			
% Solids	100			
Weight Raw Sample (g)	101.5			
Filters Used	AP15			
	HAWP			
Initial Extract pH	9.5			
Final Extract pH (24 hr)	7.3			
Acid Added (24hr)(ml)	406.			
Final Extract pH (28hr)	—			
Acid Added (4hr)(ml)	—			
Total Acid Added (ml)	406.			
Total DI Water Added (ml)	1624			
Original Liquid Phase(ml)	0			
Final Extract Volume (ml)	2030.			
RCRA Metals				
Arsenic (PPM)	<0.01			
Barium (PPM)	0.8			
Cadmium (PPM)	<0.01			
Chromium (PPM)	0.05			
Lead (PPM)	0.05			
Mercury (PPM)	<0.002			
Selenium (PPM)	<0.005			
Silver (PPM)	<0.05			

Note: Tables of pH adjustments with time have been extracted from the EIS sample work sheets and are reproduced in the section of this report containing laboratory bench sheets.

ANALYTICAL REPORT SHEET

STATE OF INDIANA - LEACHING METHOD ANALYSIS

EIS Lab Number	770F			
Client Description	#2 collector #143			
Weigh Raw Sample (g)	112.2			
Filters Used	AP15			
	HAWP			
DI Water Added (ml)	2244			
PARAMETERS				
Copper (ppm)	<0.05			
Iron (ppm)	0.14			
Manganese (ppm)	0.06			
Nickel (ppm)	0.06			
Sodium (ppm)	19.			
Zinc (ppm)	0.08			
Chlorides (ppm)	3.			
Cyanide, Total (ppm)	<0.005			
Fluoride (ppm)	0.90			
PCB (ppm)				
Phenols (ppm)	0.07			
Sulfate (ppm)	13.2			
Sulfide, Total (ppm)	1.8			
TDS (ppm)	57			
TOC (ppm)				
TOH (ppm)				
ph after 24 hours	10.2			

Note: The reverse side of this sheet lists reference methods utilized

EIS ENVIRONMENTAL ENGINEERS, INC.
1701 North Ironwood Drive • South Bend, Indiana 46635 • 219/277-5715

WASTE CLASSIFICATION ANALYSIS REPORT

Client: The Dalton Foundries ATTN: J. R. Canan Date Sampled: 2-24-86 Date Received: 3-3-86 Date Forwarded: 4-29-86 Purchase Order: 122 229	Sample Description EIS Analysis No.: 771F #4 Collector #144

This report presents results of waste classification through laboratory analysis procedures. The following references were utilized, as needed, in the evaluation procedures herein.

- "Test Methods for the Evaluation of Solid Waste - Physical/Chemical Methods" USEPA SW-846, July 1982, 2nd Edition
- "Methods for Chemical Analysis of Water and Wastes" EPA 600/4-79-020
- State of Indiana "Leaching Method"

The specific client requested analysis for the samples described above were the following.

EP Toxicity - Metals	X	State of Indiana Leaching Method	X
EP Toxicity - Organics		Volatile Organic Compounds	
Ignitability		Semi-volatile Organic Compounds (Base/Neutrals Acid Fraction)	
Corrosivity			
Reactivity		PCB ____ Pesticides	
Additional			

Materials constituting this report packet include laboratory analysis bench sheets. These bench sheets are required by the State of Indiana as an integral part of the Waste Classification Analysis Report. Certain sections of this report may not pertain to your samples but do constitute a part of the EIS Report Packet. All results are hand entered to eliminate data transfer errors.

Andris Rozite

Andris Rozite, Laboratory Director

QUALITY ASSURANCE DATA
EP TOXICITY and/or LEACHING METHOD

Parameter	% Recovery - Accuracy		% RSD Precision Analysis
	USEPA EMSL QC Sample	Matrix Spike	
Arsenic *	90.6	-	
Barium *	117.7	-	
Cadmium *	119.2	-	
Chromium *	105.6	-	
Copper	104.9		
Iron	105.5		
Lead *	110.8	-	
Manganese	105.4		
Mercury *	101	-	
Nickel	105.7		
Selenium *	107.8		
Silver *	122.5	-	
Sodium	94.6		
Zinc	104.5		
Chlorides	102.5		
Cyanide, Total	99.3		
Fluoride	76.9		
PCB			
pH			
Phenols	94.4		
Sulfate	93.4		
Sulfide, Total			
TDS			
TOC			
TOH			

* These metals are analyzed by the Method of Standard Additions

REGULATORY LIMITS (ppm)

Parameter	EP Toxicity RCRA	State of Indiana Leaching Method Foundry Waste Types Only A	B	C	D
Arsenic *	5.0	0.05	0.5	1.25	5.0
Barium *	100	1.	10.	25.	100.
Cadmium *	1.0	0.01	0.1	0.25	1.0
Chromium *	5.0	0.05	0.5	1.25	5.0
Lead *	5.0	0.05	0.5	1.25	5.0
Mercury *	0.2	0.002	0.02	0.05	0.2
Selenium *	1.0	0.01	0.1	0.25	1.0
Silver *	5.0	0.05	0.5	1.25	5.0
Chlorides	-	250.	2500.	6250.	**
Copper	-	0.25	2.5	6.25	**
Cyanide, Total	-	0.2	2.	5.	**
Fluoride	-	1.4	14.	35.	**
Iron	-	1.5	15.	**	**
Manganese	-	0.05	0.5	**	**
Nickel	-	0.2	2.	5.	**
PCB	-	-	-	-	-
pH	-	6.0 - 9.0	5 - 10	4 - 11	**
Phenols	-	0.3	3.	7.5	**
Sodium	-	250.	2500.	6250.	**
Sulfate	-	250.	2500.	6250.	**
Sulfide, Total	-	-	5.	12.5	**
TDS	-	500.	5000.	12500.	**
TOC	-	-	-	-	-
TOH	-	-	-	-	-
Zinc	-	2.5	25.	62.5	**

* Limits shown are based on EP Toxicity Analysis Data

** [illegible]

ANALYTICAL REPORT SHEET
EP TOXICITY - METALS ANALYSIS

EIS Lab Number	771 F			
Client Description	#4 Collector #144			
% Solids	100			
Weight Raw Sample (g)	100.4			
Filters Used	AP15			
	HAWP			
Initial Extract pH	6.5			
Final Extract pH (24 hr)	7.3			
Acid Added (24hr) (ml)	401.6			
Final Extract pH (28hr)	—			
Acid Added (4hr) (ml)	—			
Total Acid Added (ml)	401.6			
Total DI Water Added (ml)	1606.			
Original Liquid Phase (ml)	0			
Final Extract Volume (ml)	2007.6			
RCRA Metals				
Arsenic (PPM)	<0.01			
Barium (PPM)	<0.5			
Cadmium (PPM)	<0.01			
Chromium (PPM)	0.07			
Lead (PPM)	0.18			
Mercury (PPM)	<0.002			
Selenium (PPM)	<0.005			
Silver (PPM)	<0.05			

Note: Tables of pH adjustments with time have been extracted from the EIS sample work sheets and are reproduced in the section of this report containing laboratory bench sheets.

ANALYTICAL REPORT SHEET

STATE OF INDIANA - LEACHING METHOD ANALYSIS

EIS Lab Number		771F			
Client Description		#4 Collector #144			
* * * * * * * * * * * *		* * * * * * *	* * * * * *	* * * * * *	* * * * * *
Weigh Raw Sample (g)		112.7			
Filters Used		AP15			
		HAWP			
DI Water Added (ml)		2254			
* * * * * * * * * * * *		* * * * * * *	* * * * * *	* * * * * *	* * * * * *
PARAMETERS					
Copper	(ppm)	<0.05			
Iron	(ppm)	0.16			
Manganese	(ppm)	<0.03			
Nickel	(ppm)	<0.05			
Sodium	(ppm)	32.			
Zinc	(ppm)	0.42			
Chlorides	(ppm)	1			
Cyanide, Total	(ppm)	<0.005			
Fluoride	(ppm)	23.			
PCB	(ppm)				
Phenols	(ppm)	0.49			
Sulfate	(ppm)	<5.			
Sulfide, Total	(ppm)	1.4			
TDS	(ppm)	114.			
TOC	(ppm)				
TOH	(ppm)				
ph after 24 hours		9.4			

Note: The reverse side of this sheet lists reference methods utilized

EIS ENVIRONMENTAL ENGINEERS, INC.
1701 North Ironwood Drive • South Bend, Indiana 46635 • 219/277-5715

WASTE CLASSIFICATION ANALYSIS REPORT

Client: The Dalton Foundries	Sample Description
ATTN: J. R. Canan	EIS Analysis No.: 772F
Date Sampled: 2-24-86	#6 Collector
Date Received: 3-3-86	#145
Date Forwarded: 4-29-86	
Purchase Order: 122 229	

This report presents results of waste classification through laboratory analysis procedures. The following references were utilized, as needed, in the evaluation procedures herein.

- "Test Methods for the Evaluation of Solid Waste - Physical/Chemical Methods" USEPA SW-846, July 1982, 2nd Edition
- "Methods for Chemical Analysis of Water and Wastes" EPA 600/4-79-020
- State of Indiana "Leaching Method"

The specific client requested analysis for the samples described above were the following.

EP Toxicity - Metals	X	State of Indiana Leaching Method	X
EP Toxicity - Organics		Volatile Organic Compounds	
Ignitability		Semi-volatile Organic Compounds (Base/Neutrals Acid Fraction)	
Corrosivity			
Reactivity		PCB ____ Pesticides	
Additional			

Materials constituting this report packet include laboratory analysis bench sheets. These bench sheets are required by the State of Indiana as an integral part of the Waste Classification Analysis Report. Certain sections of this report may not pertain to your samples but do constitute a part of the EIS Report Packet. All results are hand entered to eliminate data transfer errors.

Andris Rozite

Andris Rozite, Laboratory Director

QUALITY ASSURANCE DATA
EP TOXICITY and/or LEACHING METHOD

Parameter	% Recovery - Accuracy		% RSD Precision Analysis
	USEPA EMSL QC Sample	Matrix Spike	
Arsenic *	90.6	-	
Barium *	117.7	-	
Cadmium *	119.2	-	
Chromium *	105.6	-	
Copper	104.9		
Iron	105.5		
Lead *	110.8	-	
Manganese	105.4		
Mercury *	101	-	
Nickel	105.7		
Selenium *	107.8		
Silver *	122.5	-	
Sodium	94.6		
Zinc	104.5		
Chlorides	102.5		
Cyanide, Total	99.3		
Fluoride	76.9		5.4
PCB			
pH			
Phenols	94.4		
Sulfate	93.4		
Sulfide, Total			
TDS			
TOC			
TOH			

* These metals are analyzed by the Method of Standard Additions

REGULATORY LIMITS (ppm)

Parameter	EP Toxicity RCRA	State of Indiana Leaching Method Foundry Waste Types Only A	B	C	D
Arsenic *	5.0	0.05	0.5	1.25	5.0
Barium *	100	1.	10.	25.	100.
Cadmium *	1.0	0.01	0.1	0.25	1.0
Chromium *	5.0	0.05	0.5	1.25	5.0
Lead *	5.0	0.05	0.5	1.25	5.0
Mercury *	0.2	0.002	0.02	0.05	0.2
Selenium *	1.0	0.01	0.1	0.25	1.0
Silver *	5.0	0.05	0.5	1.25	5.0
Chlorides	-	250.	2500.	6250.	**
Copper	-	0.25	2.5	6.25	**
Cyanide, Total	-	0.2	2.	5.	**
Fluoride	-	1.4	14.	35.	**
Iron	-	1.5	15.	**	**
Manganese	-	0.05	0.5	**	**
Nickel	-	0.2	2.	5.	**
PCB	-	-	-	-	-
pH	-	6.0 - 9.0	5 - 10	4 - 11	**
Phenols	-	0.3	3.	7.5	**
Sodium	-	250.	2500.	6250.	**
Sulfate	-	250.	2500.	6250.	**
Sulfide, Total	-	-	5.	12.5	**
TDS	-	500.	5000.	12500.	**
TOC	-	-	-	-	-
TOH	-	-	-	-	-
Zinc	-	2.5	25.	62.5	**

* Limits shown are based on EP Toxicity Analysis Data

ANALYTICAL REPORT SHEET
EP TOXICITY - METALS ANALYSIS

EIS Lab Number		772 F			
Client Description		#6 collector #145			
% Solids		100			
Weight Raw Sample (g)		102.3			
Filters Used		AP15			
		HAWP			
Initial Extract pH		6.9			
Final Extract pH (24 hr)		7.2			
Acid Added (24hr)(ml)		409.2			
Final Extract pH (28hr)		–			
Acid Added (4hr)(ml)		–			
Total Acid Added (ml)		409.2			
Total DI Water Added (ml)		1637			
Original Liquid Phase(ml)		0			
Final Extract Volume (ml)		2046.2			
RCRA Metals					
Arsenic	(PPM)	<0.01			
Barium	(PPM)	<0.5			
Cadmium	(PPM)	<0.01			
Chromium	(PPM)	<0.05			
Lead	(PPM)	<0.05			
Mercury	(PPM)	<0.002			
Selenium	(PPM)	<0.005			
Silver	(PPM)	<0.05			

Note: Tables of pH adjustments with time have been extracted from the EIS sample work sheets and are reproduced in the section of this report containing laboratory bench sheets.

ANALYTICAL REPORT SHEET

STATE OF INDIANA - LEACHING METHOD ANALYSIS

EIS Lab Number		772F			
Client Description		#6 collector #145			
* * * * * * * * * * * * *		* * * * * * *	* * * * * * *	* * * * * * *	* * * * * * *
Weigh Raw Sample (g)		110.6			
Filters Used		AP15			
		HAWP			
DI Water Added (ml)		2212			
* * * * * * * * * * * * *		* * * * * * *	* * * * * * *	* * * * * * *	* * * * * * *
PARAMETERS					
Copper	(ppm)	<0.05			
Iron	(ppm)	0.10			
Manganese	(ppm)	0.04			
Nickel	(ppm)	<0.05			
Sodium	(ppm)	17.			
Zinc	(ppm)	0.03			
Chlorides	(ppm)	1.			
Cyanide, Total	(ppm)	<0.005			
Fluoride	(ppm)	7.8			
PCB	(ppm)				
Phenols	(ppm)	0.26			
Sulfate	(ppm)	<5.			
Sulfide, Total	(ppm)	1.4			
TDS	(ppm)	44.			
TOC	(ppm)				
TOH	(ppm)				
ph after 24 hours		10.2			

Note: The reverse side of this sheet lists reference methods utilized

EIS ENVIRONMENTAL ENGINEERS, INC.
1701 North Ironwood Drive • South Bend, Indiana 46635 • 219/277-5715

WASTE CLASSIFICATION ANALYSIS REPORT

Client: The Dalton Foundries	Sample Description
ATTN: J. R. Canan	EIS Analysis No.: 773F
Date Sampled: 2-24-86	#9 Collector
Date Received: 3-3-86	#146
Date Forwarded: 4-29-86	
Purchase Order: 122 229	

This report presents results of waste classification through laboratory analysis procedures. The following references were utilized, as needed, in the evaluation procedures herein.

- "Test Methods for the Evaluation of Solid Waste - Physical/Chemical Methods" USEPA SW-846, July 1982, 2nd Edition
- "Methods for Chemical Analysis of Water and Wastes" EPA 600/4-79-020
- State of Indiana "Leaching Method"

The specific client requested analysis for the samples described above were the following.

EP Toxicity - Metals	X	State of Indiana Leaching Method	X
EP Toxicity - Organics		Volatile Organic Compounds	
Ignitability		Semi-volatile Organic Compounds (Base/Neutrals Acid Fraction)	
Corrosivity			
Reactivity		PCB ____ Pesticides	
Additional			

Materials constituting this report packet include laboratory analysis bench sheets. These bench sheets are required by the State of Indiana as an integral part of the Waste Classification Analysis Report. Certain sections of this report may not pertain to your samples but do constitute a part of the EIS Report Packet. All results are hand entered to eliminate data transfer errors.

Andris Rozite

Andris Rozite, Laboratory Director

QUALITY ASSURANCE DATA
EP TOXICITY and/or LEACHING METHOD

Parameter	% Recovery - Accuracy		% RSD Precision Analysis
	USEPA EMSL QC Sample	Matrix Spike	
Arsenic *	90.6	-	
Barium *	117.7	-	
Cadmium *	119.2	-	
Chromium *	105.6	-	
Copper	104.9		
Iron	105.5		
Lead *	110.8	-	
Manganese	105.4		
Mercury *	101	-	0
Nickel	105.7		
Selenium *	107.8		
Silver *	122.5	-	
Sodium	94.6		
Zinc	104.5		
Chlorides	102.5	124	
Cyanide, Total	99.3		0
Fluoride	76.9		
PCB			
pH			
Phenols	94.4		
Sulfate	93.4		
Sulfide, Total			
TDS			
TOC			
TOH			

* These metals are analyzed by the Method of Standard Additions

REGULATORY LIMITS (ppm)

Parameter	EP Toxicity RCRA	State of Indiana Leaching Method Foundry Waste Types Only A	B	C	D
Arsenic *	5.0	0.05	0.5	1.25	5.0
Barium *	100	1.	10.	25.	100.
Cadmium *	1.0	0.01	0.1	0.25	1.0
Chromium *	5.0	0.05	0.5	1.25	5.0
Lead *	5.0	0.05	0.5	1.25	5.0
Mercury *	0.2	0.002	0.02	0.05	0.2
Selenium *	1.0	0.01	0.1	0.25	1.0
Silver *	5.0	0.05	0.5	1.25	5.0
Chlorides	-	250.	2500.	6250.	**
Copper	-	0.25	2.5	6.25	**
Cyanide, Total	-	0.2	2.	5.	**
Fluoride	-	1.4	14.	35.	**
Iron	-	1.5	15.	**	**
Manganese	-	0.05	0.5	**	**
Nickel	-	0.2	2.	5.	**
PCB	-	-	-	-	-
pH	-	6.0 - 9.0	5 - 10	4 - 11	**
Phenols	-	0.3	3.	7.5	**
Sodium	-	250.	2500.	6250.	**
Sulfate	-	250.	2500.	6250.	**
Sulfide, Total	-	-	5.	12.5	**
TDS	-	500.	5000.	12500.	**
TOC	-	-	-	-	-
TOH	-	-	-	-	-
Zinc	-	2.5	25.	62.5	**

* Limits shown are based on EP Toxicity Analysis Data

** [illegible]

ANALYTICAL REPORT SHEET
EP TOXICITY - METALS ANALYSIS

EIS Lab Number	773F			
Client Description	#9 collector #146			
% Solids	100			
Weight Raw Sample (g)	101.2			
Filters Used	AP15			
	HAWP			
Initial Extract pH	9.6			
Final Extract pH (24 hr)	5.9			
Acid Added (24hr) (ml)	404.8			
Final Extract pH (28hr)	—			
Acid Added (4hr) (ml)	—			
Total Acid Added (ml)	404.8			
Total DI Water Added (ml)	1619.			
Original Liquid Phase (ml)	0			
Final Extract Volume (ml)	2023.8			
RCRA Metals				
Arsenic (PPM)	<0.01			
Barium (PPM)	0.6			
Cadmium (PPM)	<0.01			
Chromium (PPM)	0.09			
Lead (PPM)	<0.05			
Mercury (PPM)	<0.002			
Selenium (PPM)	<0.005			
Silver (PPM)	<0.05			

Note: Tables of pH adjustments with time have been extracted from the EIS sample work sheets and are reproduced in the section of this report containing laboratory bench sheets.

ANALYTICAL REPORT SHEET

STATE OF INDIANA - LEACHING METHOD ANALYSIS

EIS Lab Number		773F			
Client Description		#9 collector #146			
Weigh Raw Sample (g)		113.3			
Filters Used		AP15			
		HAWP			
DI Water Added (ml)		2266			
PARAMETERS					
Copper	(ppm)	<0.05			
Iron	(ppm)	0.29			
Manganese	(ppm)	<0.03			
Nickel	(ppm)	<0.05			
Sodium	(ppm)	20.			
Zinc	(ppm)	0.06			
Chlorides	(ppm)	3.			
Cyanide, Total	(ppm)	0.01			
Fluoride	(ppm)	0.14			
PCB	(ppm)				
Phenols	(ppm)	0.07			
Sulfate	(ppm)	<5.			
Sulfide, Total	(ppm)	1.2			
TDS	(ppm)	52			
TOC	(ppm)				
TOH	(ppm)				
ph after 24 hours		8.8			

Note: The reverse side of this sheet lists reference methods utilized

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WASTE CLASSIFICATION ANALYSIS REPORT

Client: The Dalton Foundries ATTN: J. R. Canan Date Sampled: 2-26-86 Date Received: 3-3-86 Date Forwarded: 4-29-86 Purchase Order: 122 229	Sample Description EIS Analysis No.: 774F Shell Core #147

This report presents results of waste classification through laboratory analysis procedures. The following references were utilized, as needed, in the evaluation procedures herein.

- "Test Methods for the Evaluation of Solid Waste - Physical/Chemical Methods" USEPA SW-846, July 1982, 2nd Edition
- "Methods for Chemical Analysis of Water and Wastes" EPA 600/4-79-020
- State of Indiana "Leaching Method"

The specific client requested analysis for the samples described above were the following.

EP Toxicity - Metals	X	State of Indiana Leaching Method	X
EP Toxicity - Organics		Volatile Organic Compounds	
Ignitability		Semi-volatile Organic Compounds (Base/Neutrals Acid Fraction)	
Corrosivity			
Reactivity		PCB ____ Pesticides	
Additional			

Materials constituting this report packet include laboratory analysis bench sheets. These bench sheets are required by the State of Indiana as an integral part of the Waste Classification Analysis Report. Certain sections of this report may not pertain to your samples but do constitute a part of the EIS Report Packet. All results are hand entered to eliminate data transfer errors.

Andris Rozite

Andris Rozite, Laboratory Director

QUALITY ASSURANCE DATA
EP TOXICITY and/or LEACHING METHOD

Parameter	% Recovery - Accuracy		% RSD Precision Analysis
	USEPA EMSL QC Sample	Matrix Spike	
Arsenic *	90.6	-	
Barium *	117.7	-	
Cadmium *	119.2	-	0
Chromium *	105.6	-	
Copper	104.9		
Iron	105.5		
Lead *	110.8	-	
Manganese	105.4		
Mercury *	101	-	
Nickel	105.7		
Selenium *	107.8		
Silver *	122.5	-	0
Sodium	94.6		
Zinc	104.5		
Chlorides	102.5		
Cyanide, Total	99.3		
Fluoride	76.9		
PCB			
pH			
Phenols	94.4		
Sulfate	93.4		
Sulfide, Total			
TDS			
TOC			
TOH			

* These metals are analyzed by the Method of Standard Additions

REGULATORY LIMITS (ppm)

Parameter	EP Toxicity RCRA	State of Indiana Leaching Method Foundry Waste Types Only A	B	C	D
Arsenic *	5.0	0.05	0.5	1.25	5.0
Barium *	100	1.	10.	25.	100.
Cadmium *	1.0	0.01	0.1	0.25	1.0
Chromium *	5.0	0.05	0.5	1.25	5.0
Lead *	5.0	0.05	0.5	1.25	5.0
Mercury *	0.2	0.002	0.02	0.05	0.2
Selenium *	1.0	0.01	0.1	0.25	1.0
Silver *	5.0	0.05	0.5	1.25	5.0
Chlorides	-	250.	2500.	6250.	**
Copper	-	0.25	2.5	6.25	**
Cyanide, Total	-	0.2	2.	5.	**
Fluoride	-	1.4	14.	35.	**
Iron	-	1.5	15.	**	**
Manganese	-	0.05	0.5	**	**
Nickel	-	0.2	2.	5.	**
PCB	-	-	-	-	-
pH	-	6.0 - 9.0	5 - 10	4 - 11	**
Phenols	-	0.3	3.	7.5	**
Sodium	-	250.	2500.	6250.	**
Sulfate	-	250.	2500.	6250.	**
Sulfide, Total	-	-	5.	12.5	**
TDS	-	500.	5000.	12500.	**
TOC	-	-	-	-	-
TOH	-	-	-	-	-
Zinc	-	2.5	25.	62.5	**

* Limits shown are based on EP Toxicity Analysis Data

** Testing is not required

ANALYTICAL REPORT SHEET
EP TOXICITY - METALS ANALYSIS

EIS Lab Number	774F			
Client Description	Shell Core #147			
% Solids	100			
Weight Raw Sample (g)	101.2			
Filters Used	HAWP			
Initial Extract pH	6.2			
Final Extract pH (24 hr)	5.0			
Acid Added (24hr)(ml)	2.8			
Final Extract pH (28hr)	–			
Acid Added (4hr)(ml)	–			
Total Acid Added (ml)	2.8			
Total DI Water Added (ml)	2021.			
Original Liquid Phase(ml)	0			
Final Extract Volume (ml)	2023.8			
RCRA Metals				
Arsenic (PPM)	<0.01			
Barium (PPM)	<0.5			
Cadmium (PPM)	<0.01			
Chromium (PPM)	<0.05			
Lead (PPM)	<0.05			
Mercury (PPM)	<0.002			
Selenium (PPM)	<0.005			
Silver (PPM)	<0.05			

Note: Tables of pH adjustments with time have been extracted from the EIS sample work sheets and are reproduced in the section of this report containing laboratory bench sheets.

FOUNDRY WASTE CLASSIFICATION

Client Sample Description	Shell Core #147			
Waste Type Assigned	D			
Basis for Assignment	Phenol			

The State of Indiana has set forth catagories for classification of Foundry wastes into four (4) possible waste types. The classification is based on laboratory test results and the comparison of these results with maximum contaminant limits for each catagory. Foundry waste type limits are presented in the section of this report titled Regulatory Limits.

If EIS has assigned a waste type classification for samples identified above, the assignment was made on the following basis.

- Statistical calculations were used only if the test result (for any parameter) was within ± 20% of the Regulatory Limit. If no parameter results were within this range, simple comparisons were made.
- The parameter placing a waste into a certain Waste Type has been shown.
- If statistical calculations were required, they were made as follows:
  - A single sample only was received for analysis. Statistical calculations were based on laboratory analytical precision data. The precision data used was either historical or specifically generated on that sample. In either case, the number of samples was considered to be two (2).
  - Multiple samples representing the same waste stream were received for analysis. Calculations were based on the values generated by all of the samples.

The equations used for the statistical calculations are presented on the reverse side of this report sheet. These equations were taken from SW-846.

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WASTE CLASSIFICATION ANALYSIS REPORT

Client: The Dalton Foundries ATTN: J. R. Canan Date Sampled: 2-26-86 Date Received: 3-3-86 Date Forwarded: 4-29-86 Purchase Order: 122 229	Sample Description EIS Analysis No.: 775F ISOCURE CORE #148

This report presents results of waste classification through laboratory analysis procedures. The following references were utilized, as needed, in the evaluation procedures herein.

- "Test Methods for the Evaluation of Solid Waste - Physical/Chemical Methods" USEPA SW-846, July 1982, 2nd Edition
- "Methods for Chemical Analysis of Water and Wastes" EPA 600/4-79-020
- State of Indiana "Leaching Method"

The specific client requested analysis for the samples described above were the following.

EP Toxicity - Metals	X	State of Indiana Leaching Method	X
EP Toxicity - Organics		Volatile Organic Compounds	
Ignitability		Semi-volatile Organic Compounds (Base/Neutrals Acid Fraction)	
Corrosivity			
Reactivity		PCB ____ Pesticides	
Additional			

Materials constituting this report packet include laboratory analysis bench sheets. These bench sheets are required by the State of Indiana as an integral part of the Waste Classification Analysis Report. Certain sections of this report may not pertain to your samples but do constitute a part of the EIS Report Packet. All results are hand entered to eliminate data transfer errors.

Andris Rozite

Andris Rozite, Laboratory Director

QUALITY ASSURANCE DATA
EP TOXICITY and/or LEACHING METHOD

Parameter	% Recovery - Accuracy		% RSD Precision Analysis
	USEPA EMSL QC Sample	Matrix Spike	
Arsenic *	83.7	-	0
Barium *	117.5	-	
Cadmium *	111.	-	
Chromium *	110.8	-	
Copper	108.2		
Iron	102.4		
Lead *	120.2	-	
Manganese	100.6		
Mercury *	116.7	-	
Nickel	109.2		
Selenium *	103.5		0
Silver *	127.	-	
Sodium	94.8		
Zinc	103.4		
Chlorides	102.5		
Cyanide, Total	99.3		
Fluoride	76.9		
PCB			
pH			
Phenols	94.4		12.7
Sulfate	93.4		
Sulfide, Total			
TDS			
TOC			
TOH			

* These metals are analyzed by the Method of Standard Additions

REGULATORY LIMITS (ppm)

Parameter	EP Toxicity RCRA	State of Indiana Leaching Method Foundry Waste Types Only A	B	C	D
Arsenic *	5.0	0.05	0.5	1.25	5.0
Barium *	100	1.	10.	25.	100.
Cadmium *	1.0	0.01	0.1	0.25	1.0
Chromium *	5.0	0.05	0.5	1.25	5.0
Lead *	5.0	0.05	0.5	1.25	5.0
Mercury *	0.2	0.002	0.02	0.05	0.2
Selenium *	1.0	0.01	0.1	0.25	1.0
Silver *	5.0	0.05	0.5	1.25	5.0
Chlorides	-	250.	2500.	6250.	**
Copper	-	0.25	2.5	6.25	**
Cyanide, Total	-	0.2	2.	5.	**
Fluoride	-	1.4	14.	35.	**
Iron	-	1.5	15.	**	**
Manganese	-	0.05	0.5	**	**
Nickel	-	0.2	2.	5.	**
PCB	-	-	-	-	-
pH	-	6.0 - 9.0	5 - 10	4 - 11	**
Phenols	-	0.3	3.	7.5	**
Sodium	-	250.	2500.	6250.	**
Sulfate	-	250.	2500.	6250.	**
Sulfide, Total	-	-	5.	12.5	**
TDS	-	500.	5000.	12500.	**
TOC	-	-	-	-	-
TOH	-	-	-	-	-
Zinc	-	2.5	25.	62.5	**

* Limits shown are based on EP Toxicity Analysis Data

** Testing is not required

ANALYTICAL REPORT SHEET
EP TOXICITY - METALS ANALYSIS

EIS Lab Number	775F			
Client Description	ISOCORE CORE #148			
% Solids	100			
Weight Raw Sample (g)	102.3			
Filters Used	HAWP			
Initial Extract pH	6.4			
Final Extract pH (24 hr)	4.8			
Acid Added (24hr) (ml)	2.2			
Final Extract pH (28hr)	—			
Acid Added (4hr) (ml)	—			
Total Acid Added (ml)	2.2			
Total DI Water Added (ml)	2044.			
Original Liquid Phase (ml)	0			
Final Extract Volume (ml)	2046.2			
RCRA Metals				
Arsenic (PPM)	< 0.01			
Barium (PPM)	< 0.5			
Cadmium (PPM)	< 0.01			
Chromium (PPM)	< 0.05			
Lead (PPM)	< 0.05			
Mercury (PPM)	< 0.002			
Selenium (PPM)	< 0.005			
Silver (PPM)	< 0.05			

Note: Tables of pH adjustments with time have been extracted from the EIS sample work sheets and are reproduced in the section of this report containing laboratory bench sheets.

ANALYTICAL REPORT SHEET

STATE OF INDIANA - LEACHING METHOD ANALYSIS

EIS Lab Number	775F			
Client Description	ISOCORE CORE #148			
Weigh Raw Sample (g)	111.5			
Filters Used	HAWP			
DI Water Added (ml)	2230			
PARAMETERS				
Copper (ppm)	0.07			
Iron (ppm)	0.13			
Manganese (ppm)	<0.03			
Nickel (ppm)	<0.05			
Sodium (ppm)	<1.			
Zinc (ppm)	0.05			
Chlorides (ppm)	1.			
Cyanide, Total (ppm)	<0.005			
Fluoride (ppm)	<0.1			
PCB (ppm)				
Phenols (ppm)	2.23			
Sulfate (ppm)	<5.			
Sulfide, Total (ppm)	1.8			
TDS (ppm)	20.			
TOC (ppm)				
TOH (ppm)				
ph after 24 hours	6.3			

Note: The reverse side of this sheet lists reference methods utilized

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WASTE CLASSIFICATION ANALYSIS REPORT

Client: The Dalton Foundries	Sample Description
ATTN: J. R. Canan	EIS Analysis No.: 776F
Date Sampled: 2-26-86	
Date Received: 3-3-86	SO_2 Core
Date Forwarded: 4-29-86	#149
Purchase Order: 122 229	

This report presents results of waste classification through laboratory analysis procedures. The following references were utilized, as needed, in the evaluation procedures herein.

- "Test Methods for the Evaluation of Solid Waste - Physical/Chemical Methods" USEPA SW-846, July 1982, 2nd Edition
- "Methods for Chemical Analysis of Water and Wastes" EPA 600/4-79-020
- State of Indiana "Leaching Method"

The specific client requested analysis for the samples described above were the following.

EP Toxicity - Metals	X	State of Indiana Leaching Method	X
EP Toxicity - Organics		Volatile Organic Compounds	
Ignitability		Semi-volatile Organic Compounds (Base/Neutrals Acid Fraction)	
Corrosivity			
Reactivity		PCB ____ Pesticides	
Additional			

Materials constituting this report packet include laboratory analysis bench sheets. These bench sheets are required by the State of Indiana as an integral part of the Waste Classification Analysis Report. Certain sections of this report may not pertain to your samples but do constitute a part of the EIS Report Packet. All results are hand entered to eliminate data transfer errors.

Andris Rozite

Andris Rozite, Laboratory Director

QUALITY ASSURANCE DATA
EP TOXICITY and/or LEACHING METHOD

Parameter	% Recovery - Accuracy		% RSD Precision Analysis
	USEPA EMSL QC Sample	Matrix Spike	
Arsenic *	83.7	-	
Barium *	117.5	-	0
Cadmium *	111.	-	
Chromium *	110.8	-	
Copper	108.2		
Iron	102.4		
Lead *	120.2	-	
Manganese	100.6		
Mercury *	116.7	-	
Nickel	109.2		
Selenium *	103.5		
Silver *	127.	-	
Sodium	94.8		
Zinc	103.4		
Chlorides	102.5		
Cyanide, Total	99.3		
Fluoride	76.9		
PCB			
pH			
Phenols	94.4		
Sulfate	93.4		
Sulfide, Total			
TDS			
TOC			
TOH			

* These metals are analyzed by the Method of Standard Additions

REGULATORY LIMITS (ppm)

Parameter	EP Toxicity RCRA	State of Indiana Leaching Method Foundry Waste Types Only A	B	C	D
Arsenic *	5.0	0.05	0.5	1.25	5.0
Barium *	100	1.	10.	25.	100.
Cadmium *	1.0	0.01	0.1	0.25	1.0
Chromium *	5.0	0.05	0.5	1.25	5.0
Lead *	5.0	0.05	0.5	1.25	5.0
Mercury *	0.2	0.002	0.02	0.05	0.2
Selenium *	1.0	0.01	0.1	0.25	1.0
Silver *	5.0	0.05	0.5	1.25	5.0
Chlorides	-	250.	2500.	6250.	**
Copper	-	0.25	2.5	6.25	**
Cyanide, Total	-	0.2	2.	5.	**
Fluoride	-	1.4	14.	35.	**
Iron	-	1.5	15.	**	**
Manganese	-	0.05	0.5	**	**
Nickel	-	0.2	2.	5.	**
PCB	-	-	-	-	-
pH	-	6.0 - 9.0	5 - 10	4 - 11	**
Phenols	-	0.3	3.	7.5	**
Sodium	-	250.	2500.	6250.	**
Sulfate	-	250.	2500.	6250.	**
Sulfide, Total	-	-	5.	12.5	**
TDS	-	500.	5000.	12500.	**
TOC	-	-	-	-	-
TOH	-	-	-	-	-
Zinc	-	2.5	25.	62.5	**

* Limits shown are based on EP Toxicity Analysis Data
** Testing is not required

ANALYTICAL REPORT SHEET
EP TOXICITY - METALS ANALYSIS

EIS Lab Number	776F			
Client Description	SO_2 Core #149			
% Solids	100			
Weight Raw Sample (g)	100.5			
Filters Used	HAWP			
Initial Extract pH	6.4			
Final Extract pH (24 hr)	4.9			
Acid Added (24hr) (ml)	1			
Final Extract pH (28hr)	—			
Acid Added (4hr) (ml)	—			
Total Acid Added (ml)	1			
Total DI Water Added (ml)	2009			
Original Liquid Phase (ml)	0			
Final Extract Volume (ml)	2010			
RCRA Metals				
Arsenic (PPM)	<0.01			
Barium (PPM)	<0.5			
Cadmium (PPM)	<0.01			
Chromium (PPM)	<0.05			
Lead (PPM)	<0.05			
Mercury (PPM)	<0.002			
Selenium (PPM)	<0.005			
Silver (PPM)	<0.05			

Note: Tables of pH adjustments with time have been extracted from the EIS sample work sheets and are reproduced in the section of this report containing laboratory bench sheets.

ANALYTICAL REPORT SHEET

STATE OF INDIANA - LEACHING METHOD ANALYSIS

EIS Lab Number	776F			
Client Description	SO_2 Core #149			
Weigh Raw Sample (g)	111.2			
Filters Used	HAWP			
DI Water Added (ml)	2224			
PARAMETERS				
Copper (ppm)	0.04			
Iron (ppm)	0.14			
Manganese (ppm)	<0.03			
Nickel (ppm)	0.09			
Sodium (ppm)	<1.			
Zinc (ppm)	0.03			
Chlorides (ppm)	<1.			
Cyanide, Total (ppm)	<0.005			
Fluoride (ppm)	<0.1			
PCB (ppm)				
Phenols (ppm)	1.51			
Sulfate (ppm)	<5			
Sulfide, Total (ppm)	1.6			
TDS (ppm)	14.			
TOC (ppm)				
TOH (ppm)				
ph after 24 hours	6.2			

Note: The reverse side of this sheet lists reference methods utilized

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WASTE CLASSIFICATION ANALYSIS REPORT

Client: The Dalton Foundries	Sample Description
ATTN: J. R. Canan	EIS Analysis No.: 777F
Date Sampled: 2-24-86	
Date Received: 3-3-86	Waste Sand
Date Forwarded: 4-29-86	#150
Purchase Order: 122 229	

This report presents results of waste classification through laboratory analysis procedures. The following references were utilized, as needed, in the evaluation procedures herein.

- "Test Methods for the Evaluation of Solid Waste - Physical/Chemical Methods" USEPA SW-846, July 1982, 2nd Edition
- "Methods for Chemical Analysis of Water and Wastes" EPA 600/4-79-020
- State of Indiana "Leaching Method"

The specific client requested analysis for the samples described above were the following.

EP Toxicity - Metals	X	State of Indiana Leaching Method	X
EP Toxicity - Organics		Volatile Organic Compounds	
Ignitability		Semi-volatile Organic Compounds (Base/Neutrals Acid Fraction)	
Corrosivity			
Reactivity		PCB ____ Pesticides	
Additional			

Materials constituting this report packet include laboratory analysis bench sheets. These bench sheets are required by the State of Indiana as an integral part of the Waste Classification Analysis Report. Certain sections of this report may not pertain to your samples but do constitute a part of the EIS Report Packet. All results are hand entered to eliminate data transfer errors.

Andris Rozite

Andris Rozite, Laboratory Director

QUALITY ASSURANCE DATA
EP TOXICITY and/or LEACHING METHOD

Parameter	% Recovery - Accuracy		% RSD Precision Analysis
	USEPA EMSL QC Sample	Matrix Spike	
Arsenic *	83.7	-	
Barium *	117.5	-	
Cadmium *	111.	-	
Chromium *	110.8	-	
Copper	108.2		
Iron	102.4		
Lead *	120.2	-	
Manganese	100.6		
Mercury *	116.7	-	
Nickel	109.2		
Selenium *	103.5		
Silver *	127.	-	
Sodium	94.8		
Zinc	103.4		
Chlorides	102.5		
Cyanide, Total	99.3		
Fluoride	76.9		
PCB			
pH			
Phenols	94.4		
Sulfate	93.4	60	
Sulfide, Total			
TDS			
TOC			
TOH			

* These metals are analyzed by the Method of Standard Additions

REGULATORY LIMITS (ppm)

Parameter	EP Toxicity RCRA	State of Indiana Leaching Method Foundry Waste Types Only A	B	C	D
Arsenic *	5.0	0.05	0.5	1.25	5.0
Barium *	100	1.	10.	25.	100.
Cadmium *	1.0	0.01	0.1	0.25	1.0
Chromium *	5.0	0.05	0.5	1.25	5.0
Lead *	5.0	0.05	0.5	1.25	5.0
Mercury *	0.2	0.002	0.02	0.05	0.2
Selenium *	1.0	0.01	0.1	0.25	1.0
Silver *	5.0	0.05	0.5	1.25	5.0
Chlorides	-	250.	2500.	6250.	**
Copper	-	0.25	2.5	6.25	**
Cyanide, Total	-	0.2	2.	5.	**
Fluoride	-	1.4	14.	35.	**
Iron	-	1.5	15.	**	**
Manganese	-	0.05	0.5	**	**
Nickel	-	0.2	2.	5.	**
PCB	-	-	-	-	-
pH	-	6.0 - 9.0	5 - 10	4 - 11	**
Phenols	-	0.3	3.	7.5	**
Sodium	-	250.	2500.	6250.	**
Sulfate	-	250.	2500.	6250.	**
Sulfide, Total	-	-	5.	12.5	**
TDS	-	500.	5000.	12500.	**
TOC	-	-	-	-	-
TOH	-	-	-	-	-
Zinc	-	2.5	25.	62.5	**

* Limits shown are based on EP Toxicity Analysis Data

** Testing is not required

ANALYTICAL REPORT SHEET
EP TOXICITY - METALS ANALYSIS

EIS Lab Number	777F			
Client Description	Waste Sand #150			
% Solids	100			
Weight Raw Sample (g)	102.4			
Filters Used	AP15			
	AP25			
	HAWP			
Initial Extract pH	9.8			
Final Extract pH (24 hr)	5.0			
Acid Added (24hr)(ml)	22.6			
Final Extract pH (28hr)	—			
Acid Added (4hr)(ml)	—			
Total Acid Added (ml)	22.6			
Total DI Water Added (ml)	2025.			
Original Liquid Phase(ml)	0			
Final Extract Volume (ml)	2047.6			
RCRA Metals				
Arsenic (PPM)	<0.01			
Barium (PPM)	0.7			
Cadmium (PPM)	<0.01			
Chromium (PPM)	0.05			
Lead (PPM)	<0.05			
Mercury (PPM)	<0.002			
Selenium (PPM)	<0.005			
Silver (PPM)	<0.05			

Note: Tables of pH adjustments with time have been extracted from the EIS sample work sheets and are reproduced in the section of this report containing laboratory bench sheets.

LEACHING METHOD ANALYTICAL REFERENCES

LEACHATE FORMATION

The leaching procedure utilized, and the equipment employed, is described on the report sheet titled SUPPLEMENTARY DATA EXTRACTION PROCEDURE TOXICITY TEST. The only deviation from the description is that NO PH adjustments were made.

ANALYTICAL METHODS

PARAMETER	SW-846 Method #	EPA 600/4-79-020 Method #
Chlorides		325.3
Copper	3010 / 7210	
Cyanide, Total	9010	
Fluoride		340.2
Iron		236.1
Manganese		243.1
Nickel	3010 / 7520	
PCB	8080	
pH		150.1
Phenols		420.2
Sodium		273.1
Sulfate		374.4
Sulfide, Total	9030	
TDS		160.2
TOC	9060	
TOH	9020	
Zinc	3010 / 7950	

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WASTE CLASSIFICATION ANALYSIS REPORT

Client: The Dalton Foundries	Sample Description
ATTN: J. R. Canan	EIS Analysis No.: 778F
Date Sampled: 2-27-86	Slag
Date Received: 3-3-86	#151
Date Forwarded: 4-29-86	
Purchase Order: 122 229	

This report presents results of waste classification through laboratory analysis procedures. The following references were utilized, as needed, in the evaluation procedures herein.

- "Test Methods for the Evaluation of Solid Waste - Physical/Chemical Methods" USEPA SW-846, July 1982, 2nd Edition
- "Methods for Chemical Analysis of Water and Wastes" EPA 600/4-79-020
- State of Indiana "Leaching Method"

The specific client requested analysis for the samples described above were the following.

EP Toxicity - Metals	X	State of Indiana Leaching Method	X
EP Toxicity - Organics		Volatile Organic Compounds	
Ignitability		Semi-volatile Organic Compounds (Base/Neutrals Acid Fraction)	
Corrosivity			
Reactivity		PCB ____ Pesticides	
Additional			

Materials constituting this report packet include laboratory analysis bench sheets. These bench sheets are required by the State of Indiana as an integral part of the Waste Classification Analysis Report. Certain sections of this report may not pertain to your samples but do constitute a part of the EIS Report Packet. All results are hand entered to eliminate data transfer errors.

Andris Rozite

Andris Rozite, Laboratory Director

REGULATORY LIMITS (ppm)

Parameter	EP Toxicity RCRA	State of Indiana Leaching Method Foundry Waste Types Only A	B	C	D
Arsenic *	5.0	0.05	0.5	1.25	5.0
Barium *	100	1.	10.	25.	100.
Cadmium *	1.0	0.01	0.1	0.25	1.0
Chromium *	5.0	0.05	0.5	1.25	5.0
Lead *	5.0	0.05	0.5	1.25	5.0
Mercury *	0.2	0.002	0.02	0.05	0.2
Selenium *	1.0	0.01	0.1	0.25	1.0
Silver *	5.0	0.05	0.5	1.25	5.0
Chlorides	-	250.	2500.	6250.	**
Copper	-	0.25	2.5	6.25	**
Cyanide, Total	-	0.2	2.	5.	**
Fluoride	-	1.4	14.	35.	**
Iron	-	1.5	15.	**	**
Manganese	-	0.05	0.5	**	**
Nickel	-	0.2	2.	5.	**
PCB	-	-	-	-	-
pH	-	6.0 - 9.0	5 - 10	4 - 11	**
Phenols	-	0.3	3.	7.5	**
Sodium	-	250.	2500.	6250.	**
Sulfate	-	250.	2500.	6250.	**
Sulfide, Total	-	-	5.	12.5	**
TDS	-	500.	5000.	12500.	**
TOC	-	-	-	-	-
TOH	-	-	-	-	-
Zinc	-	2.5	25.	62.5	**

* Limits shown are based on EP Toxicity Analysis Data

** Testing is not required

QUALITY ASSURANCE DATA
EP TOXICITY and/or LEACHING METHOD

Parameter	% Recovery - Accuracy		% RSD Precision Analysis
	USEPA EMSL QC Sample	Matrix Spike	
Arsenic *	83.7	-	
Barium *	117.5	-	
Cadmium *	111.	-	
Chromium *	110.8	-	0
Copper	108.2		
Iron	102.4		
Lead *	120.2	-	
Manganese	100.6		
Mercury *	116.7	-	
Nickel	109.2		
Selenium *	103.5		
Silver *	127.	-	
Sodium	94.8		
Zinc	103.4		
Chlorides	102.5		
Cyanide, Total	99.3		
Fluoride	76.9		
PCB			
pH			
Phenols	94.4		
Sulfate	93.4		2.3
Sulfide, Total			
TDS			
TOC			
TOH			

* These metals are analyzed by the Method of Standard Additions

ANALYTICAL REPORT SHEET
EP TOXICITY - METALS ANALYSIS

EIS Lab Number		778F			
Client Description		Slag #151			
% Solids		100			
Weight Raw Sample (g)		104.1			
Filters Used		HAWP			
Initial Extract pH		9.8			
Final Extract pH (24 hr)		6.1			
Acid Added (24hr)(ml)		336.4			
Final Extract pH (28hr)		5.6			
Acid Added (4hr)(ml)		80.			
Total Acid Added (ml)		416.4			
Total DI Water Added (ml)		1616			
Original Liquid Phase(ml)		0			
Final Extract Volume (ml)		2032.4			
RCRA Metals					
Arsenic	(PPM)	<0.01			
Barium	(PPM)	0.8			
Cadmium	(PPM)	<0.01			
Chromium	(PPM)	0.09			
Lead	(PPM)	0.16			
Mercury	(PPM)	<0.002			
Selenium	(PPM)	<0.005			
Silver	(PPM)	<0.05			

Note: Tables of pH adjustments with time have been extracted from the EIS sample work sheets and are reproduced in the section of this report containing laboratory bench sheets.

ANALYTICAL REPORT SHEET

STATE OF INDIANA - LEACHING METHOD ANALYSIS

EIS Lab Number	778F			
Client Description	Slag #151			
Weigh Raw Sample (g)	111.0			
Filters Used	HAWP			
DI Water Added (ml)	2220			
PARAMETERS				
Copper (ppm)	0.09			
Iron (ppm)	0.13			
Manganese (ppm)	<0.03			
Nickel (ppm)	0.06			
Sodium (ppm)	4.			
Zinc (ppm)	0.09			
Chlorides (ppm)	6.			
Cyanide, Total (ppm)	<0.005			
Fluoride (ppm)	0.32			
PCB (ppm)				
Phenols (ppm)	<0.005			
Sulfate (ppm)	18.			
Sulfide, Total (ppm)	2.4			
TDS (ppm)	70.			
TOC (ppm)				
TOH (ppm)				
ph after 24 hours	10.3			

Note: The reverse side of this sheet lists reference methods utilized

EIS ENVIRONMENTAL ENGINEERS, INC.
1701 North Ironwood Drive • South Bend, Indiana 46635 • 219/277-5715

WASTE CLASSIFICATION ANALYSIS REPORT

Client: The Dalton Foundries	Sample Description
ATTN: J. R. Canan	EIS Analysis No.: 779F
Date Sampled: 2-28-86	East Settling Tank
Date Received: 3-3-86	#152
Date Forwarded: 4-29-86	
Purchase Order: 122 229	

This report presents results of waste classification through laboratory analysis procedures. The following references were utilized, as needed, in the evaluation procedures herein.

- "Test Methods for the Evaluation of Solid Waste - Physical/Chemical Methods" USEPA SW-846, July 1982, 2nd Edition
- "Methods for Chemical Analysis of Water and Wastes" EPA 600/4-79-020
- State of Indiana "Leaching Method"

The specific client requested analysis for the samples described above were the following.

EP Toxicity - Metals	X	State of Indiana Leaching Method	X
EP Toxicity - Organics		Volatile Organic Compounds	
Ignitability		Semi-volatile Organic Compounds (Base/Neutrals Acid Fraction)	
Corrosivity			
Reactivity		PCB ____ Pesticides	
Additional			

Materials constituting this report packet include laboratory analysis bench sheets. These bench sheets are required by the State of Indiana as an integral part of the Waste Classification Analysis Report. Certain sections of this report may not pertain to your samples but do constitute a part of the EIS Report Packet. All results are hand entered to eliminate data transfer errors.

Andris Rozite

Andris Rozite, Laboratory Director

QUALITY ASSURANCE DATA
EP TOXICITY and/or LEACHING METHOD

Parameter	% Recovery - Accuracy		% RSD Precision Analysis
	USEPA EMSL QC Sample	Matrix Spike	
Arsenic *	83.7	-	
Barium *	117.5	-	
Cadmium *	111.	-	
Chromium *	110.8	-	
Copper	108.2		0
Iron	102.4		0
Lead *	120.2	-	
Manganese	100.6		20.2
Mercury *	116.7	-	
Nickel	109.2		0
Selenium *	103.5		
Silver *	127.	-	
Sodium	94.8		0
Zinc	103.4		70.7
Chlorides	102.5		
Cyanide, Total	99.3		
Fluoride	76.9		
PCB			
pH			
Phenols	94.4		
Sulfate	93.4		
Sulfide, Total			15.7
TDS			
TOC			
TOH			

* These metals are analyzed by the Method of Standard Additions

REGULATORY LIMITS (ppm)

Parameter	EP Toxicity RCRA	State of Indiana Leaching Method Foundry Waste Types Only A	B	C	D
Arsenic *	5.0	0.05	0.5	1.25	5.0
Barium *	100	1.	10.	25.	100.
Cadmium *	1.0	0.01	0.1	0.25	1.0
Chromium *	5.0	0.05	0.5	1.25	5.0
Lead *	5.0	0.05	0.5	1.25	5.0
Mercury *	0.2	0.002	0.02	0.05	0.2
Selenium *	1.0	0.01	0.1	0.25	1.0
Silver *	5.0	0.05	0.5	1.25	5.0
Chlorides	-	250.	2500.	6250.	**
Copper	-	0.25	2.5	6.25	**
Cyanide, Total	-	0.2	2.	5.	**
Fluoride	-	1.4	14.	35.	**
Iron	-	1.5	15.	**	**
Manganese	-	0.05	0.5	**	**
Nickel	-	0.2	2.	5.	**
PCB	-	-	-	-	-
pH	-	6.0 - 9.0	5 - 10	4 - 11	**
Phenols	-	0.3	3.	7.5	**
Sodium	-	250.	2500.	6250.	**
Sulfate	-	250.	2500.	6250.	**
Sulfide, Total	-	-	5.	12.5	**
TDS	-	500.	5000.	12500.	**
TOC	-	-	-	-	-
TOH	-	-	-	-	-
Zinc	-	2.5	25.	62.5	**

* Limits shown are based on EP Toxicity Analysis Data

** Testing is not

ANALYTICAL REPORT SHEET
EP TOXICITY - METALS ANALYSIS

EIS Lab Number	779F			
Client Description	East Settling Tank #152			
% Solids	70.0			
Weight Raw Sample (g)	119.8			
Filters Used	AP15			
	HAWP			
Initial Extract pH	7.3			
Final Extract pH (24 hr)	4.9			
Acid Added (24hr) (ml)	30.7			
Final Extract pH (28hr)	—			
Acid Added (4hr) (ml)	—			
Total Acid Added (ml)	30.7			
Total DI Water Added (ml)	1648.			
Original Liquid Phase (ml)	31.			
Final Extract Volume (ml)	1709.7			
RCRA Metals				
Arsenic (PPM)	<0.01			
Barium (PPM)	0.6			
Cadmium (PPM)	0.02			
Chromium (PPM)	<0.05			
Lead (PPM)	<0.05			
Mercury (PPM)	<0.002			
Selenium (PPM)	<0.005			
Silver (PPM)	<0.05			

Note: Tables of pH adjustments with time have been extracted from the EIS sample work sheets and are reproduced in the section of this report containing laboratory bench sheets.

ANALYTICAL REPORT SHEET

STATE OF INDIANA - LEACHING METHOD ANALYSIS

EIS Lab Number	779F			
Client Description	East Settling Tank #152			
Weigh Raw Sample (g)	121.4			
Filters Used	AP15			
	AP25			
	HAWP			
DI Water Added (ml)	2428			
PARAMETERS				
Copper (ppm)	0.08			
Iron (ppm)	<0.10			
Manganese (ppm)	0.04			
Nickel (ppm)	<0.05			
Sodium (ppm)	23.			
Zinc (ppm)	<0.03			
Chlorides (ppm)	8			
Cyanide, Total (ppm)	0.007			
Fluoride (ppm)	0.50			
PCB (ppm)				
Phenols (ppm)	0.008			
Sulfate (ppm)	22.			
Sulfide, Total (ppm)	1.8			
TDS (ppm)	94			
TOC (ppm)				
TOH (ppm)				
ph after 24 hours	7.0			

Note: The reverse side of this sheet lists reference methods utilized

EIS ENVIRONMENTAL ENGINEERS, INC.
1701 North Ironwood Drive • South Bend, Indiana 46635 • 219/277-5715

WASTE CLASSIFICATION ANALYSIS REPORT

Client: The Dalton Foundries	Sample Description
ATTN: J. R. Canan	EIS Analysis No.: 780F
Date Sampled: 2-28-86	North Settling Tank
Date Received: 3-3-86	#153
Date Forwarded: 4-29-86	
Purchase Order: 122 229	

This report presents results of waste classification through laboratory analysis procedures. The following references were utilized, as needed, in the evaluation procedures herein.

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The specific client requested analysis for the samples described above were the following.

EP Toxicity - Metals	X	State of Indiana Leaching Method	X
EP Toxicity - Organics		Volatile Organic Compounds	
Ignitability		Semi-volatile Organic Compounds (Base/Neutrals Acid Fraction)	
Corrosivity			
Reactivity		PCB ____ Pesticides	
Additional			

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